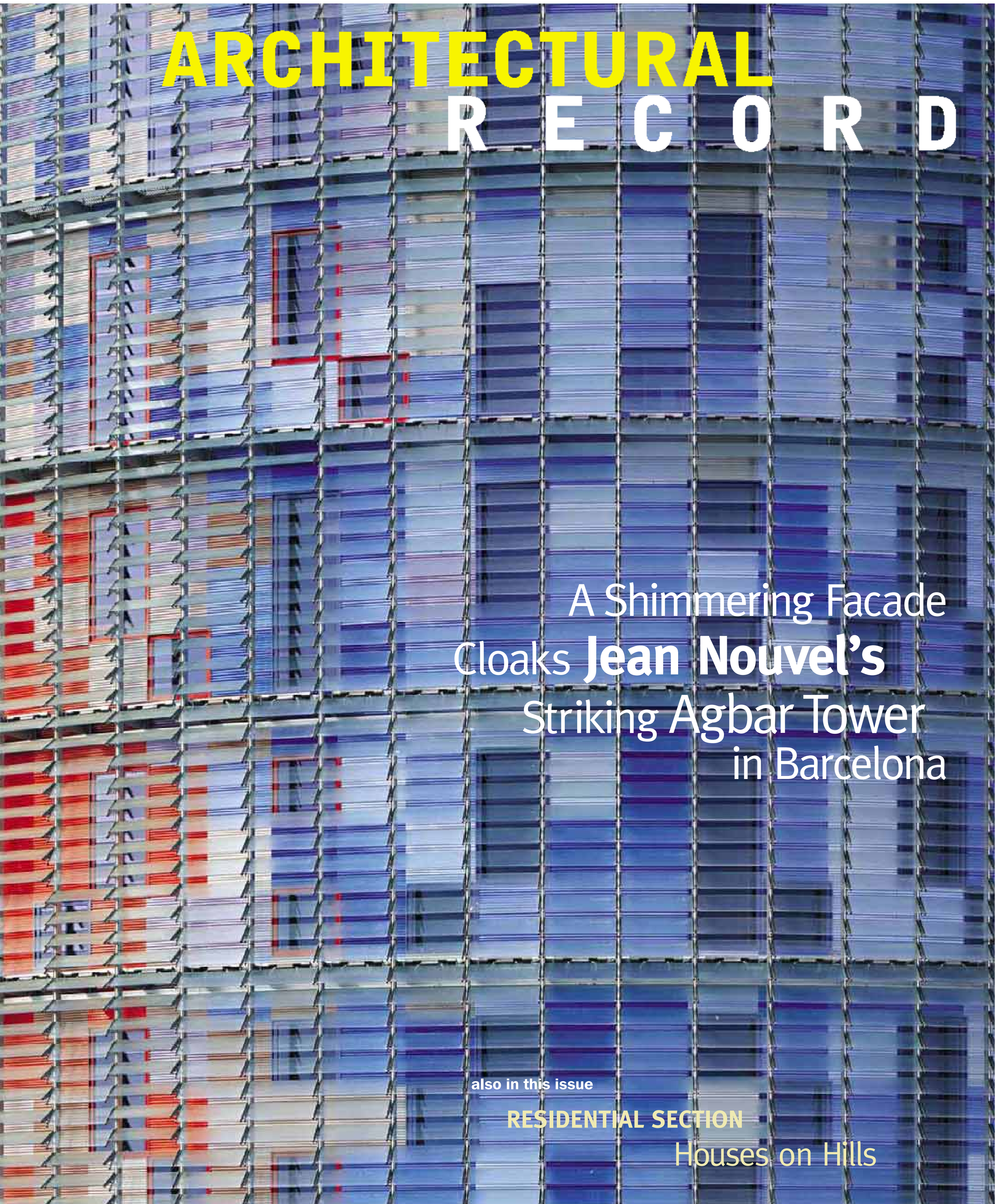

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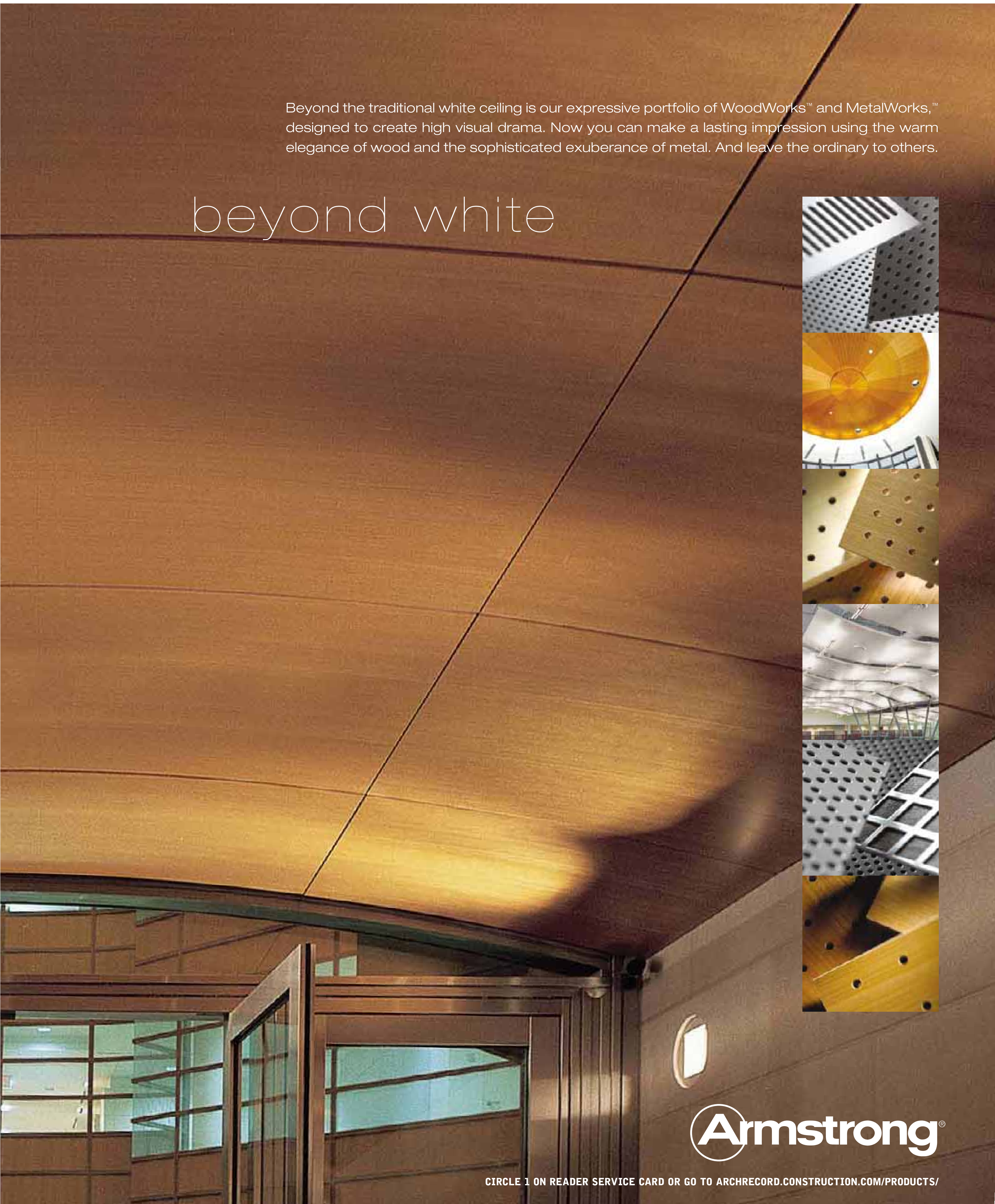

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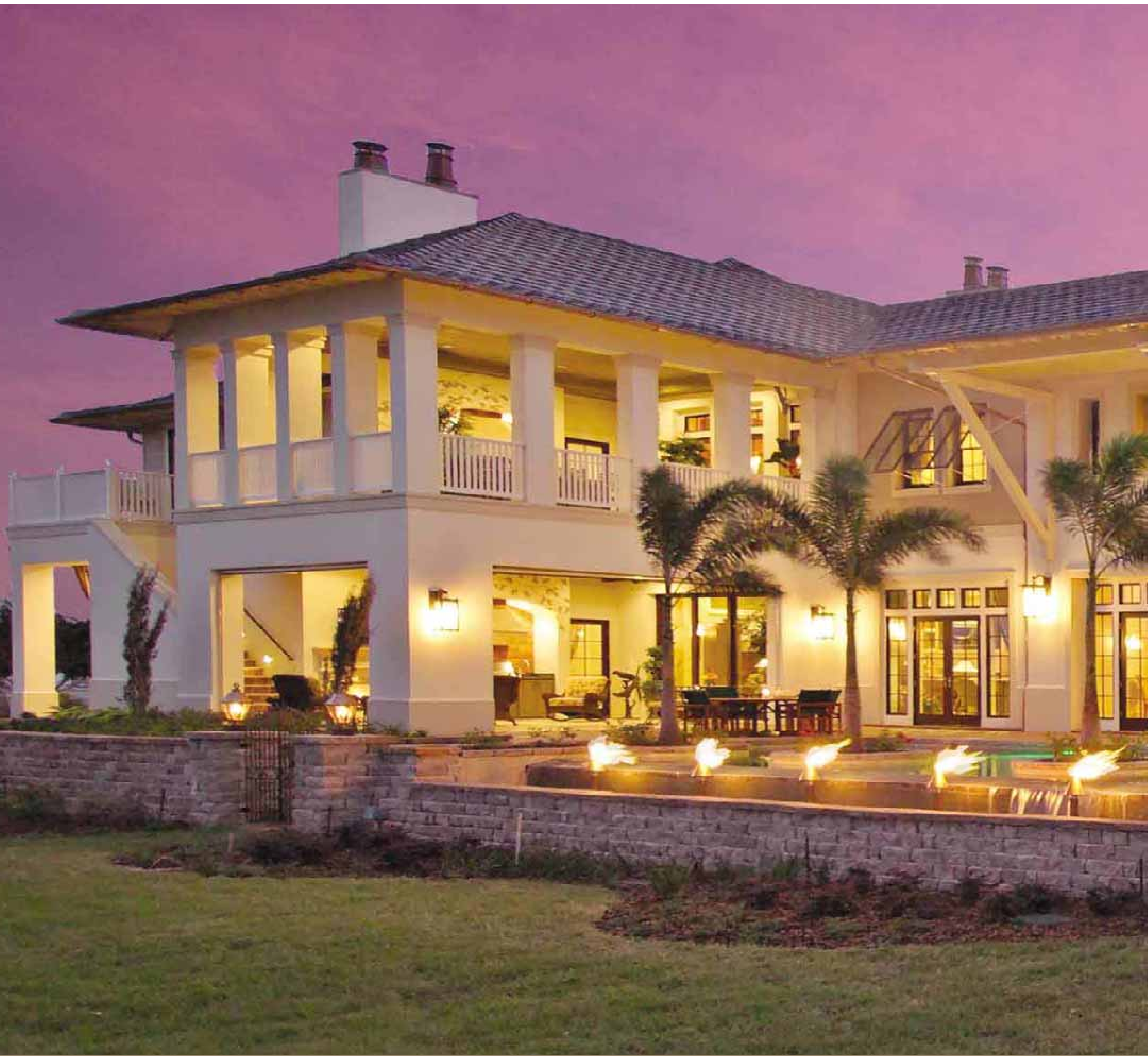

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EDITORIAL ASSISTANT	Sarah Cox
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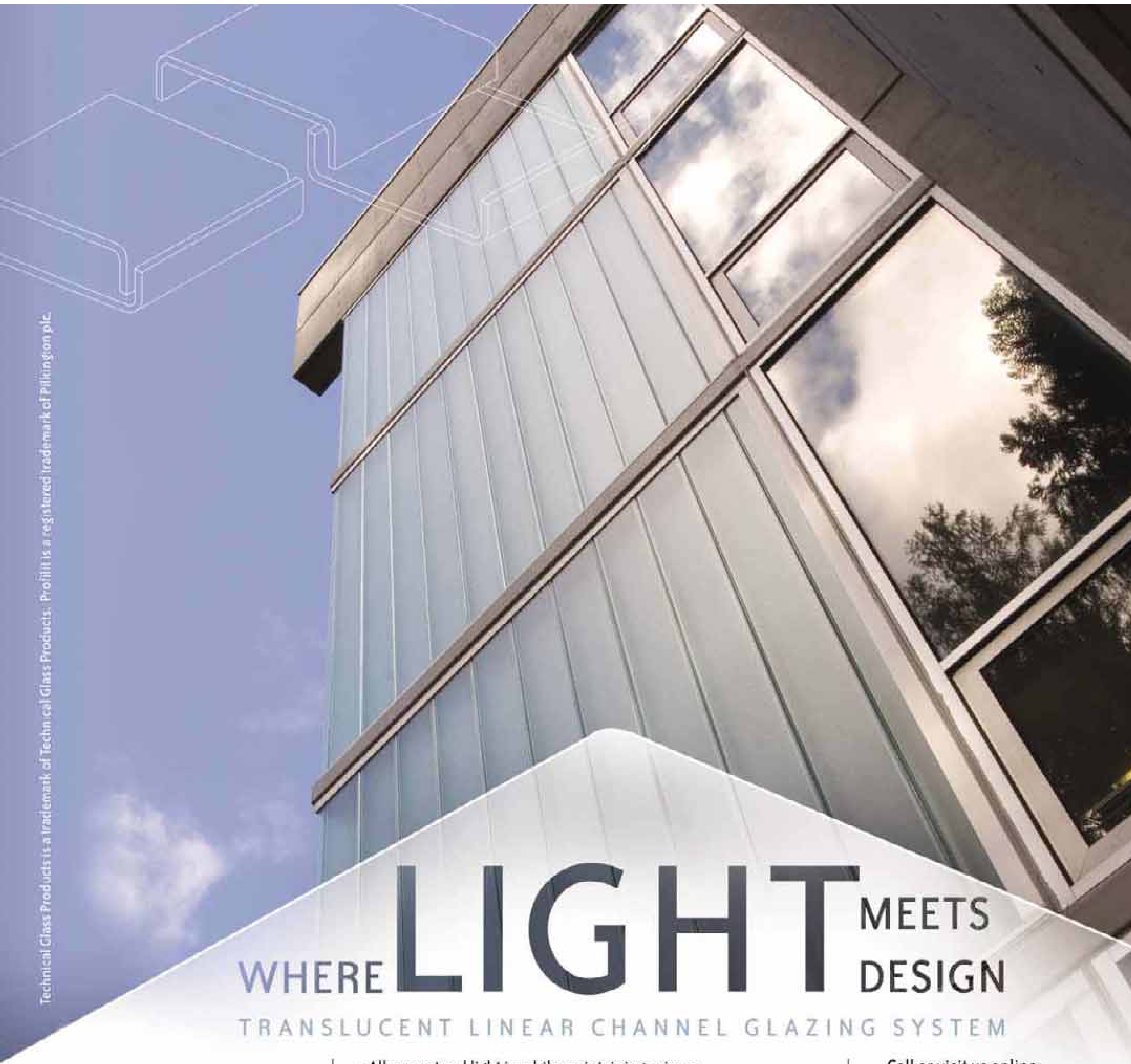

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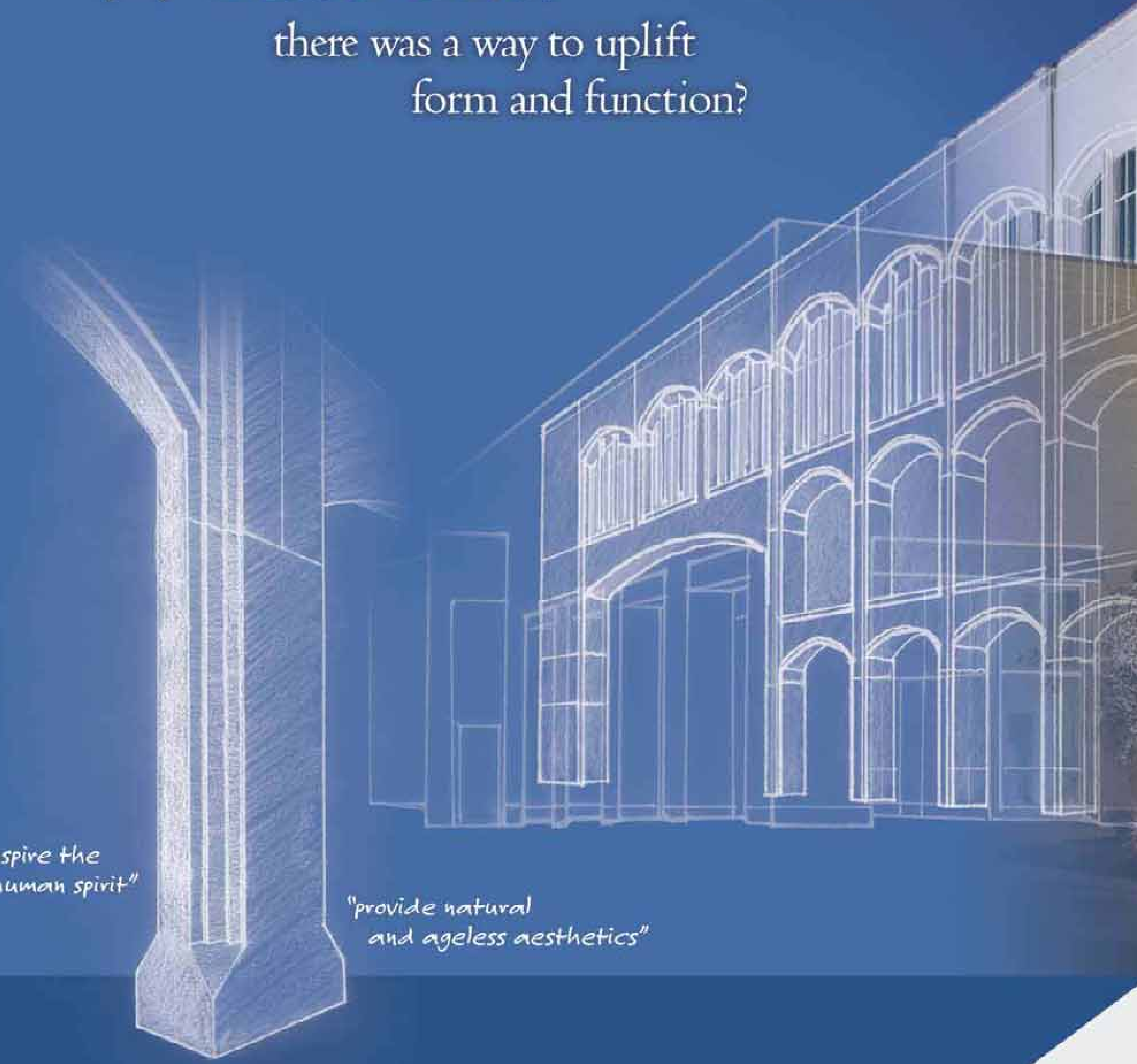
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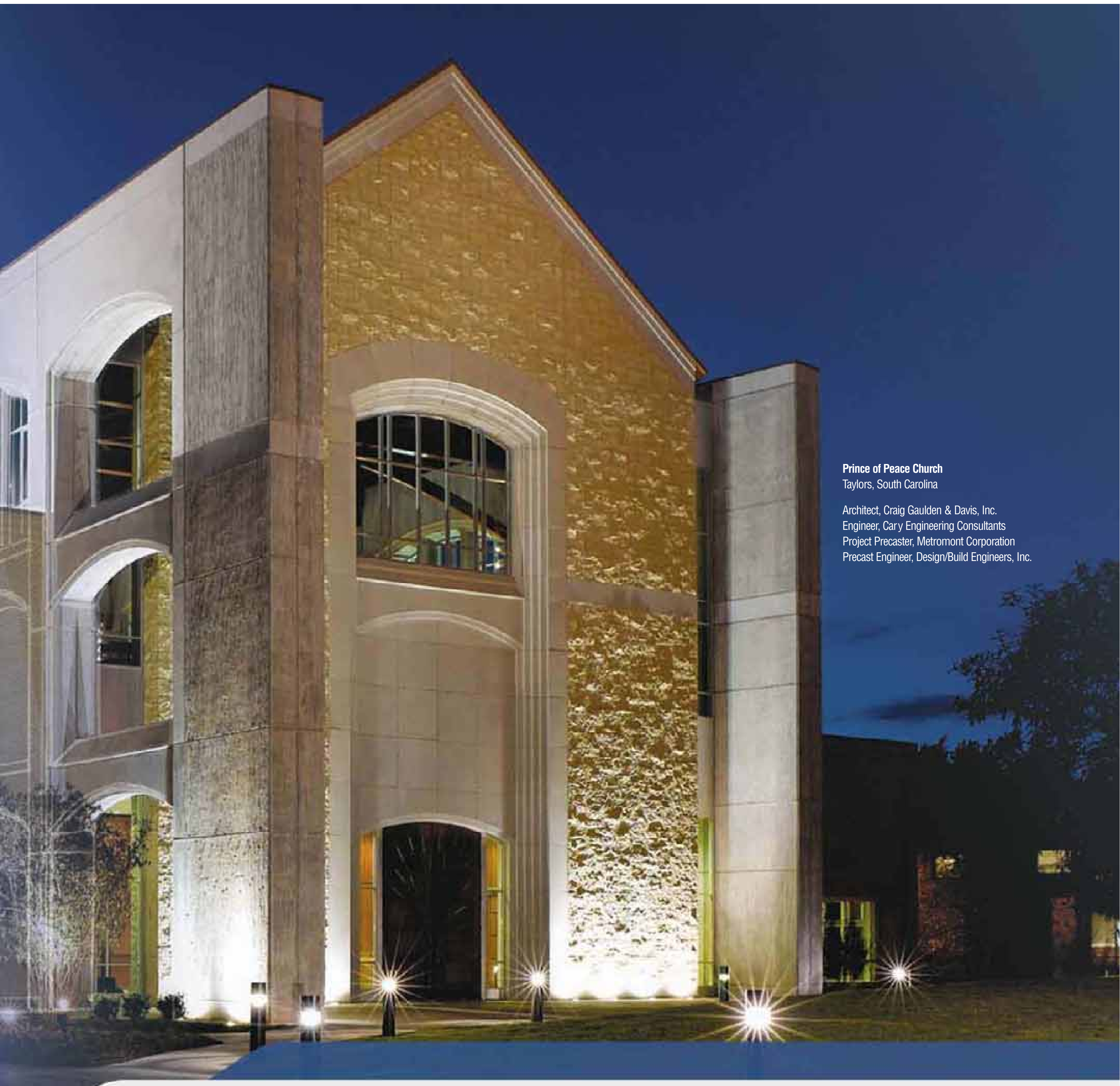

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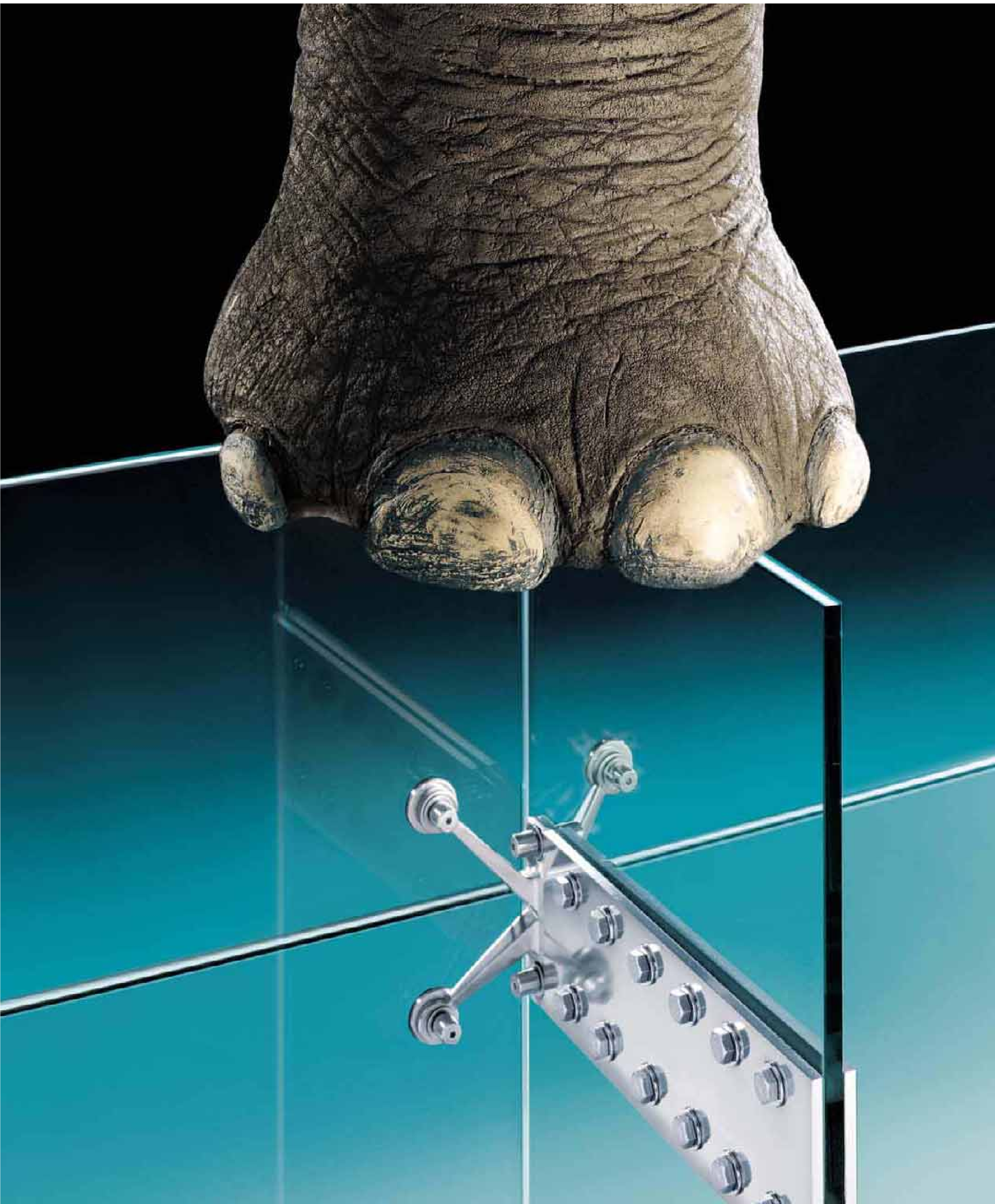

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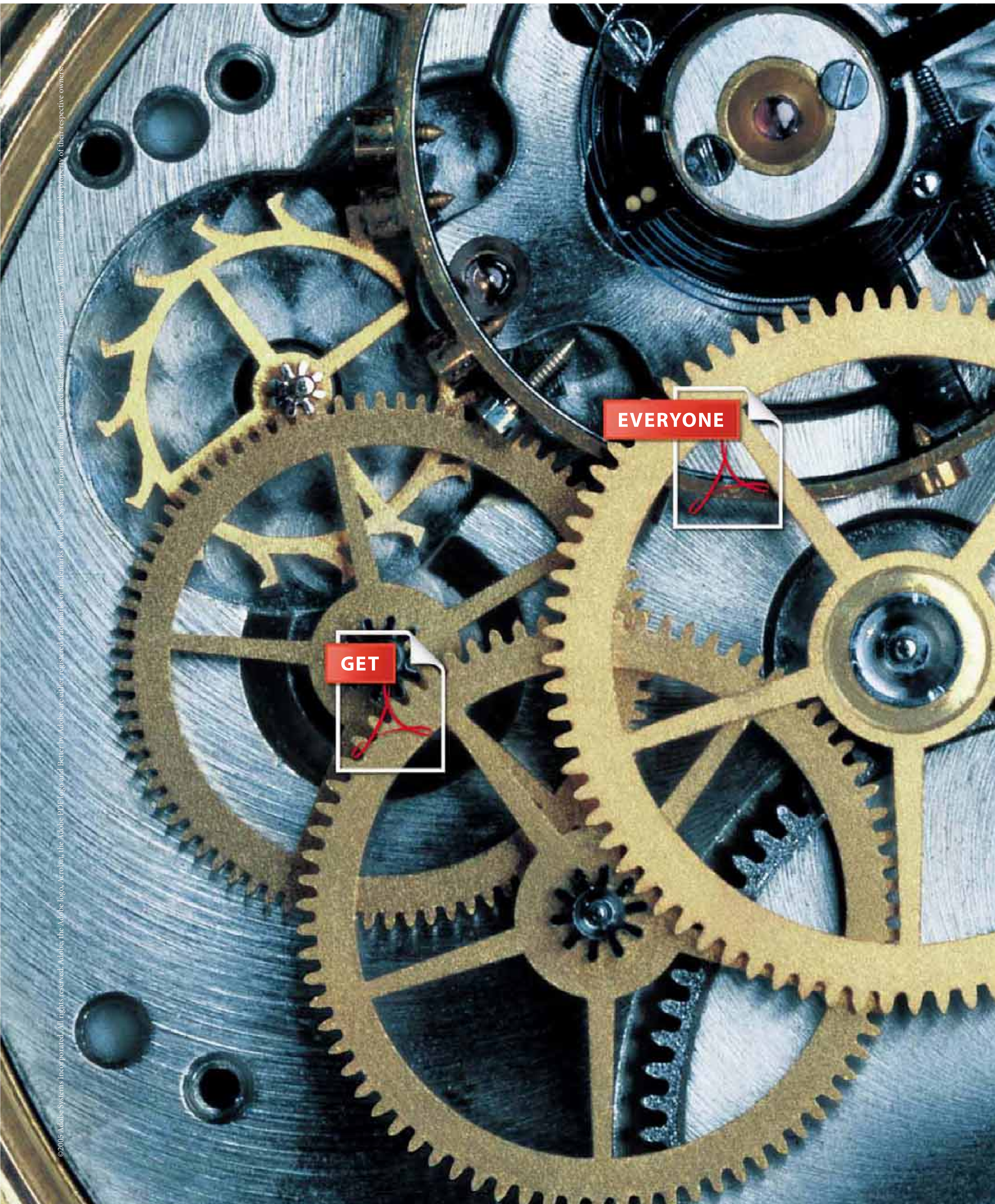

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On the Cover: *Agbar Tower, by Ateliers Jean Nouvel. Photograph by Roland Halbe*
Right: *ING Head Offices, by Erick van Egeraat. Photograph by Christian Richters*

News

29 **AIA Gold Medal recipient and 2006 Firm Award**
30 **Special Hurricane Report**

Departments

19 **Editorial: Reconstructing Kuwait**
21 **Letters***
47 **Archrecord2: For the emerging architect** *by Ingrid Spencer**
51 **Correspondent's File: New Orleans** *by Sam Lubell*
57 **Critique: Worlds apart** *by Robert Campbell, FAIA*
61 **Books: Marketing Tips**
69 **Snapshot: Pixel House** *by Beth Broome*
228 **Dates & Events***
248 **Lost to Katrina: Sullivan's Cottage** *by Suzanne Stephens**

Features

74 **Turning Surface Into Symbol** *by Joseph Giovannini*
Design firm Sussman/Prejza enriches architecture with graphics.
80 **Openness in the Era of Security** *by Jane C. Loeffler*
Supreme Court Justice Stephen Breyer speaks on courthouse design.

Projects

88 **Agbar Tower, *Barcelona*** *by James S. Russell, AIA**
Ateliers Jean Nouvel, with b720 arquitectos
Barcelona's skyline welcomes a startling new icon.
96 **Desert Broom Library, *Arizona*** *by Ingrid Spencer**
Richärd+Bauer
Clad in weathered steel, a library makes its home in the desert.
102 **Architecture and Art Building, *Texas*** *by Sarah Amelar**
Roto Architects
A "dancing" new building brings inspiration to a campus.
108 **ING Head Offices, *Hungary*** *by Tracy Metz**
Erick van Egeraat Associated Architects
A hyperkinetic facade shakes things up on a staid streetscape.
116 **Daniel Arts Center, *Massachusetts*** *by Sam Lubell**
Ann Beha Architects
Quirky and progressive, a complex feeds off a school's creative spirit.

Building Types Study 853

125 **Introduction: Adaptive Reuse** *by Suzanne Stephens*
126 **Independence Park, *California*** *by Joseph Giovannini**
Frank R. Webb Architects
132 **The Barn at Fallingwater, *Pennsylvania*** *by James Murdock**
Bohlin Cywinski Jackson
136 **Local Union 580, *New York*** *by Suzanne Stephens**
Daniel Goldner Architects
140 **Masanari Murai Art Museum, *Japan*** *by Naomi R. Pollock, AIA**
Kengo Kuma & Associates

For additional Adaptive Reuse projects, go to Building Types Study at **www.archrecord.com**.

Architectural Technology

149 **The Perils of Restoring "Less Is More"** *by Sara Hart**
Performing reconstructive surgery on Mies's C.R. Crown Hall.

Residential

159 **Introduction** *by Jane F. Kolleeny*
160 **Long Residence** *by Victoria Medgyesi*
Cutler Anderson Architects
164 **Hill House** *by Michael Webb*
Johnston Marklee & Associates
170 **Art Studio and Residence** *by Jane F. Kolleeny*
The Office of Peter Rose
176 **Sunset Cabin** *by Kelly Rude*
Taylor_Smyth architects
183 **CEDIA Review** *by Rebecca Day*

Products

187 **Preservation** *by Rita Catinella Orrell*
191 **Product Briefs**
194 **Promosedia Review** *by Charles Linn, FAIA*
197 **Product Literature**

224 **Reader Service***
226 **AIA/CES Self-Report Form***

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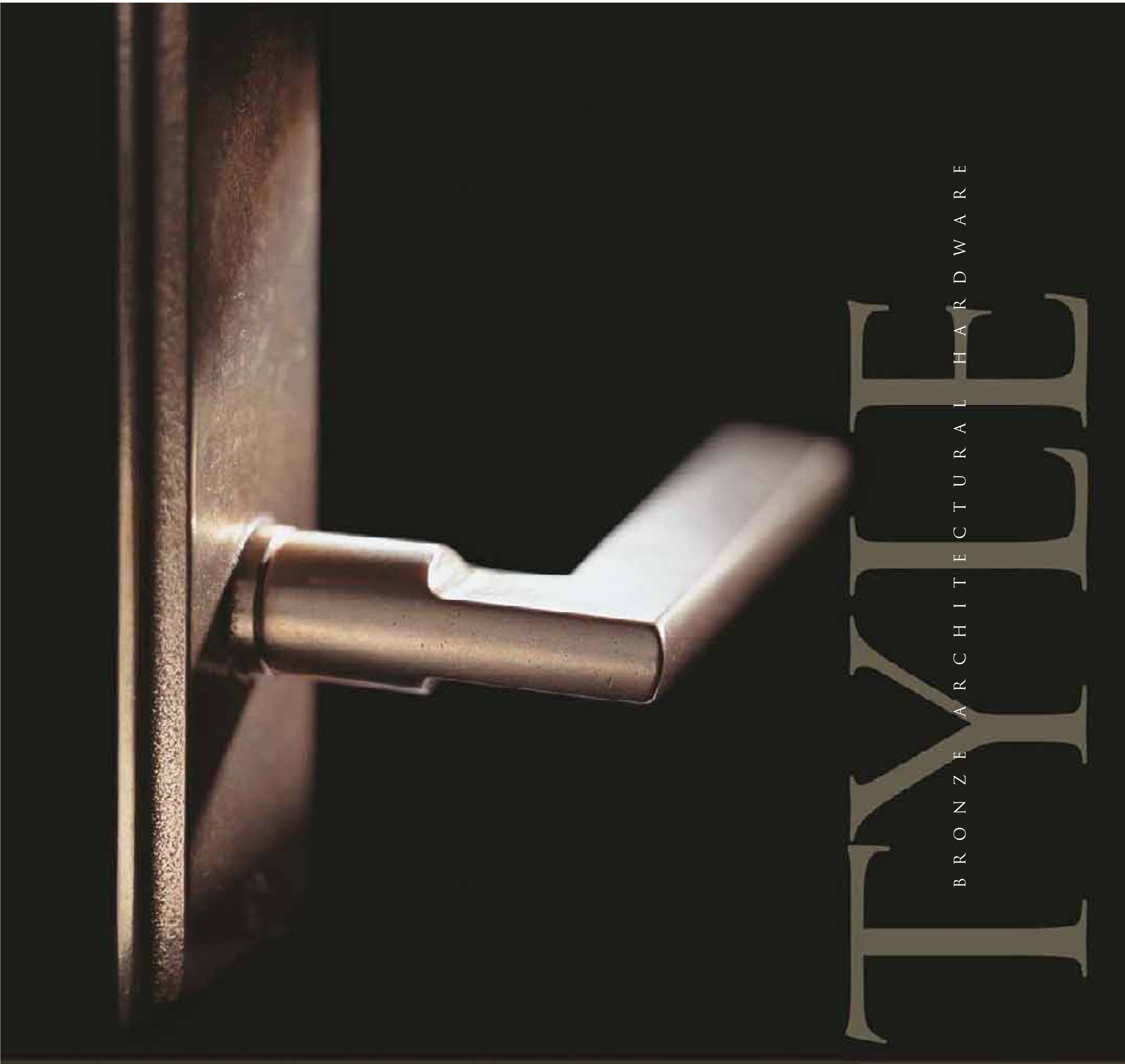

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All courses qualify for one Learning Unit.

202-206 **Thermal and Moisture Control in Exterior Metal Walls**
By Peter J. Arsenault, AIA, NCARB, LEED-AP
Provided by Centria

207-211 **Air Barriers: Increasing Building Performance, Decreasing Energy Costs**
By Charlotte Forbe
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213-217 **Concrete Waterproofing with Crystalline Technology**
By Stanley Stark, FAIA
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218-222 **The Pros and Cons of Restoring and Replacing Wood Windows**
By Karin Tetlow
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Projects

From the Arizona desert to Texas to Budapest to Spain, this month *Architectural Record* takes you across the globe to view a variety of inspiring projects, both public and private.

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House of The Month

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Building Types Studies

As these extreme makeovers prove, not every preservation and renovation project need be done with subtlety; sometimes a more radical approach is needed–but it all depends on the original building.

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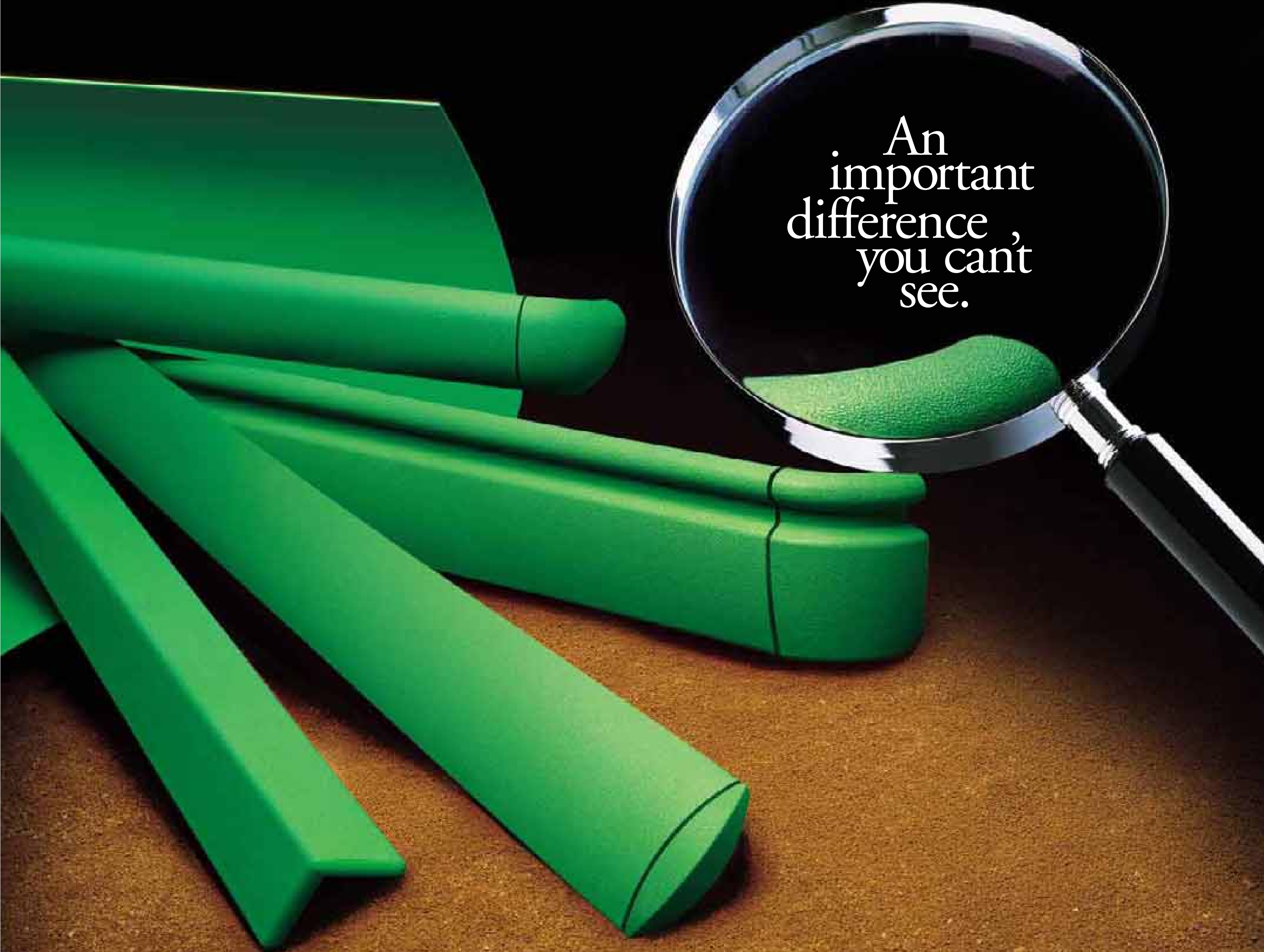

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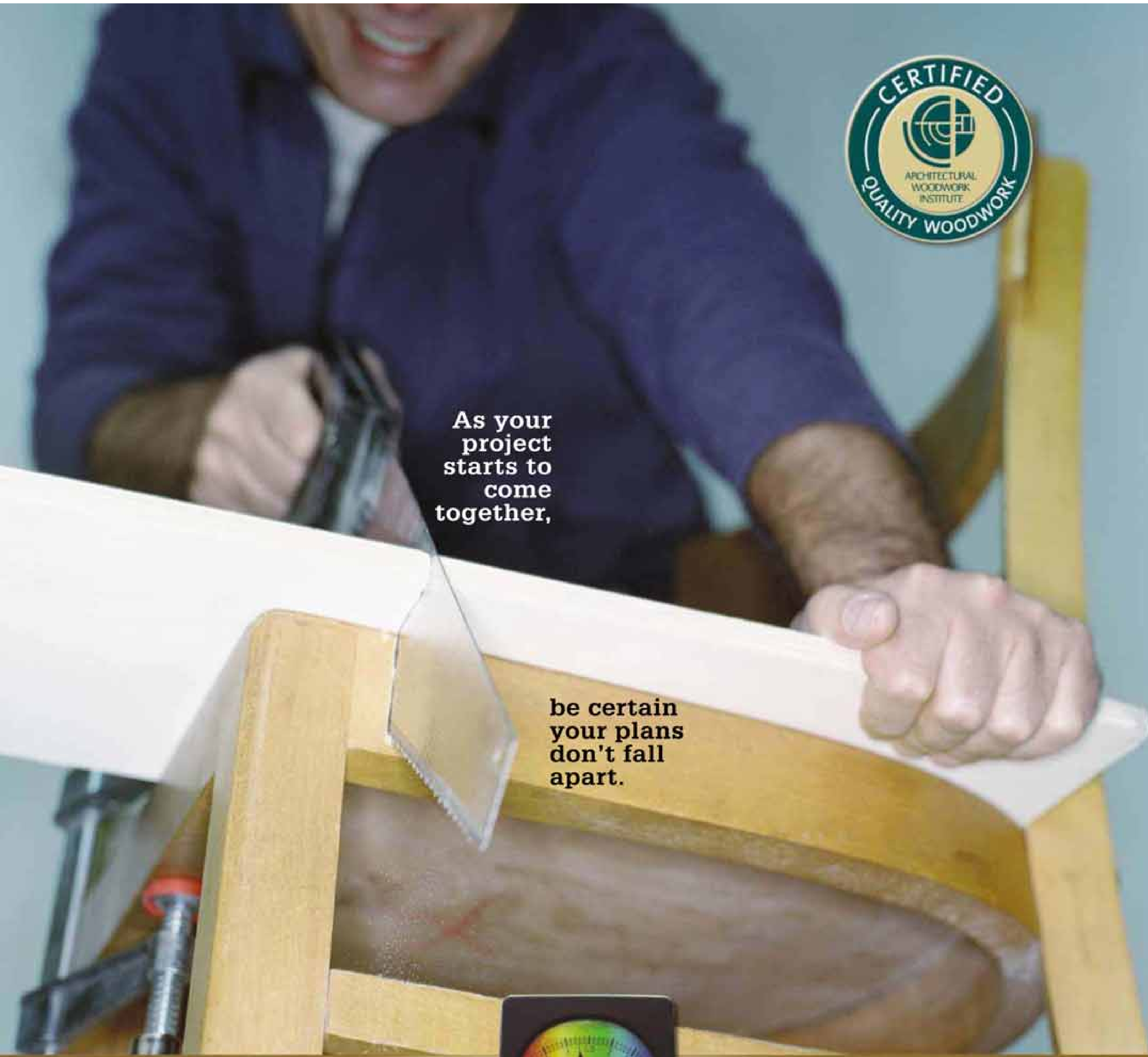
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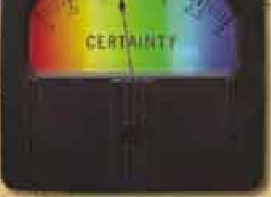

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Reconstructing Kuwait

Editorial

By Robert Ivy, FAIA

To drive through contemporary Kuwait today, you could hardly guess the context. Sitting stalled in traffic on the ring road, a thoroughly contemporary highway more reminiscent of Palm Springs than Desert Storm, there is little memory of the area's Bedouin past or its recent history, especially of the early morning of August 12, 1990, when Iraqi forces rolled into town with violent force. Except for the occasional checkpoint at a sensitive government site, there is also little realization of another Iraqi war, just over the border.

Instead, today's Xanadu-like Kuwait City, a metropolis of approximately 1 million, seems to be thriving, running on a river of oil down to a sunlit sea (with apologies to Coleridge). This prosperous, tiny state, which controls a staggering 10 percent of the world's oil wealth, is translating black gold to concrete, banking on the real estate of its capital city as economic anchor for the 21st century. Kuwait City's emerging character serves as a case study for all architects, engineers, planners, and clients, because Kuwait City is rebounding from invasion, with equal, liberated force.

International architects have made the trek up to the crux of the Persian Gulf before, in the construction frenzy of the late 1970s. That was when the Swedish-designed, blue-button-covered tower trilogy that defines the skyline appeared. The market peaked, and waned, as did Kuwait's stock market, which rose and then fell with a thud in 1982, prompting an exodus of construction capital from the capital. In the absence of another Iraqi threat to Kuwait's sovereignty, the money has returned.

Examining the skyline from the highway, the view appears vaguely Americanized and totally new. Major design houses from Europe and the United States, together with their local counterparts, have each contributed tall buildings that stand in ribbons from north to south, with large gaps in between. At the human scale, the lower-scaled remnants of a 1950s city peer out at random, lively witnesses of a modified International Style, layered in neon and paint. Where are we, anyway?

The Kuwait Society of Engineers, a group that includes its architects, recently convened a symposium on Middle Eastern architecture called "Directions" to address such questions. The conference asked, what values do we want our cities to reflect? What are the formative constraints on architecture in a distinctive culture: climate, people, economy, myth, and belief system? What is the role of ornament (in this case, geometric Islamic ornament)? Of craft? Examples within this forum dissected distinctive historic patterns within the Arabian Peninsula, reminding audiences how tight-knit social systems produced clustered housing with clearly differentiated public and private zones and interconnections through internal passageways. Today, standard lots with large freestanding houses or apartment blocks seem derived more from Desperate Housewives than from a people's deep memory.

While drawing no firm conclusions, the conference—and a simultaneous gathering of architecture critics sponsored by the Aga Khan Award for Architecture—produced discussion on the potential role of a cluster of factors such as climate in shaping a new architecture, one more appropriate for a new Kuwait. This energy-rich nation can theoretically lead others toward a more sustainable architecture, where climatic response helps shape the buildings of the future.

Simultaneously, a competition for the downtown node near the city's historic post office and Salhia Plaza demonstrated that the time has come for freewheeling growth to be channeled into authentic, three-dimensional urbanism. While conceptual, the competition provided a new vision for Kuwait City's downtown that may spur urban planning for other Middle Eastern cities.

Since the trip to this distant country demands 14 hours of hard flying time from the United States, it might be easy to dismiss the professional ruminations of a group of architects or engineers on the far side of the globe. What does this desert have to do with California's? Kuwait proves how quickly cities can change, as well as the existential crisis such a recovery can provoke. In our new, interconnected world, with man-made and natural crises abounding, what becomes of Kuwait City—in its search for meaning, for an appropriate urbanity, as well as for its sense of self—bears meaning for the rest of us.

Robert Ivy

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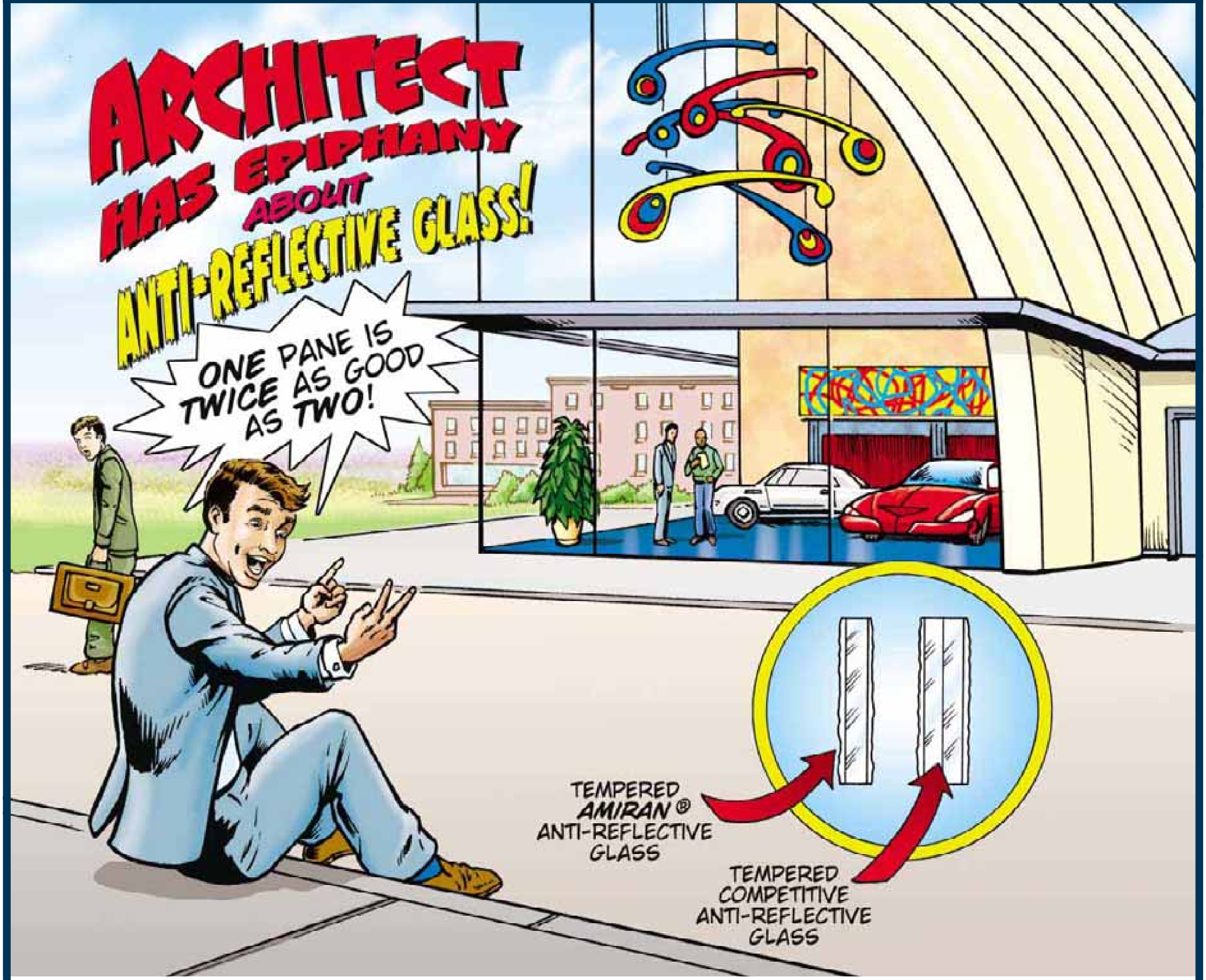
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Letters

Hard times in the Big Easy

Thank you for your editorial about New Orleans ["What Architects Can Do," November 2005, page 17]. We certainly are in a mess and desperately need the support of those in Washington. Many of us feel that the cry for help is falling on dead ears. New Orleans is one of the most important cities in the country—if not the world—for architecture. No other city in the U.S. has the number and percentage of historic structures we have. And it's a unique blend with numerous house types unheard of anywhere else. It simply has to be rebuilt and revitalized. Yet, as you drive around, three and a half months later, entire neighborhoods are dark, the flooded cars are still on the street. It has to be seen to be understood.

An issue devoted to New Orleans detailing the history and culture of the city, along with pictures of the variety of houses, buildings, and neighborhoods, would be a real eye-opener for many around the country who are unaware of what we have (had). There are also architects here with talent, firms that need work (there is none right now as we sit waiting to hear our fate, waiting for insurance companies, and for the verdict on the extent of levee protection Washington will provide). Certainly, if there is a federally backed revival and reinvestment starts, we will all be very busy. The question is, how long can we expect to wait? How long can we keep paying our staff members? The problem is many layered and will take much time to resolve.

—Mac Ball
Waggonner & Ball Architects
New Orleans

Sustainable solutions

I read your editorial about taking action in the aftermath of Hurricanes Katrina and Rita. In it you ask, "Are there that many trees and nails available for the massive rebuilding effort? That much concrete? And with so many demands made on resources, how can the sheer numbers of housing units required be realized?" I ask, must we rely on traditional building materials, such as timber, nails, and concrete? The current situation presents a great opportunity for architects, engineers, and planners involved in the rebuilding efforts to take a nontraditional look at the problem and apply sustainable construction materials and techniques.

—Evonne S.C. Chong
Tasmania, Australia

Taking down the de Young

Your recent review of the de Young Museum in San Francisco [November 2005, page 13], well written as it was, neglected the problems the building has with its exterior massing and finish. Only a dismissive comment at the article's end mentioned many people's strong dislike for its hulking and homely exterior. The building does not work with regard to exterior light conditions as they affect massing, texture, and color. Furthermore, the photographs featured do not convey its unrelenting massiveness. There are movements in Modern architecture which today are reviled, but once were greeted with great enthusiasm. Witness Brutalism: As architects know, many cities today cannot wait to get rid of many of the concrete monstrosities they produced. The ungainly, misshapen, and unattractive exterior of the de Young Museum, however stylistically current it may be today, will certainly be on that list in the future.

—James Shay, FAIA
San Rafael, Calif.

Modern optimism

The introduction by Jane F. Kolleeny to "Multifamily Housing: Fighting Sprawl" cited traditional families as the reason for suburban sprawl and credits nontraditional families, and others, for the renewed interest in urban living. While this is probably mostly correct, it is striking that ARCHITECTURAL RECORD doesn't assume a more positive outlook for the future of traditional families returning to the city. Supporting this blame-game truism reinforces unfortunate misconceptions about the lifestyle desires of all kinds of people, and forgets that urban influx housing is primarily affluent housing (The D.C. Fiscal Policy reported that affordable housing in the district fell by nearly 12,000 units last year). Kolleeny proposes that it's predominantly single parents, retirees, empty nesters, and young professionals who desire to move into urban areas. Why exclude traditional families? Why not take an inclusive stance about the attraction of good design? Why not resurrect the Modern optimism about good design's universal attraction and powerful models for future living instead of past failures?

—Camilo Llorens Bearman
Ritter Architects
Alexandria, Va.

Drawing the professional line

With regard to your September editorial, "The View From Two Penn" [page 19]: Where is the line between professional responsibilities and profit? As a profession, is it not our role to ask "how does this project fit in?" as part of the charge of protecting the health, safety, and welfare of the public? When a developer client asks a firm to conceptualize a project in another city, does that architectural firm have a responsibility to ask the tough questions? Or is it a matter of don't ask, don't care, it's not in my backyard—let the locals deal with the problems. As a profession, are we mercenaries for hire? Or do we serve the greater good?

—Brion Lipschutz, AIA
Ayers Saint Gross Architects & Planners
Baltimore

Dog days

Your writing on poorly designed buildings truly struck a chord with me. I am involved in traditional architectural design; however, my work focus over the past 20 years has been real estate due diligence, which has allowed me to become intimately familiar with buildings of note in most every major market in the country. I agree with you wholeheartedly that the architecture profession will be well served by stepping back, looking at the mistakes, and learning from them. I am fortunate to be in your fair city several times each month, and yes, you have a few shining examples of these buildings. However, the wonderful architecture in New York City balances these out very well. Not to pick on them, but Boston, Chicago, Atlanta, and Los Angeles could learn from the same self appraisal. Keep up the great work.

—Ron Hadaway, Associate AIA
Atlanta

Corrections:

In the obituary for Edmund Bacon [December, 2005, page 36], the phrase "who was raised as a Quaker" was accidentally omitted. The sentence should have read: "Always his own man, Edmund Bacon, who was raised as a Quaker, entered the Navy during World War II, instead of registering as a conscientious objector."

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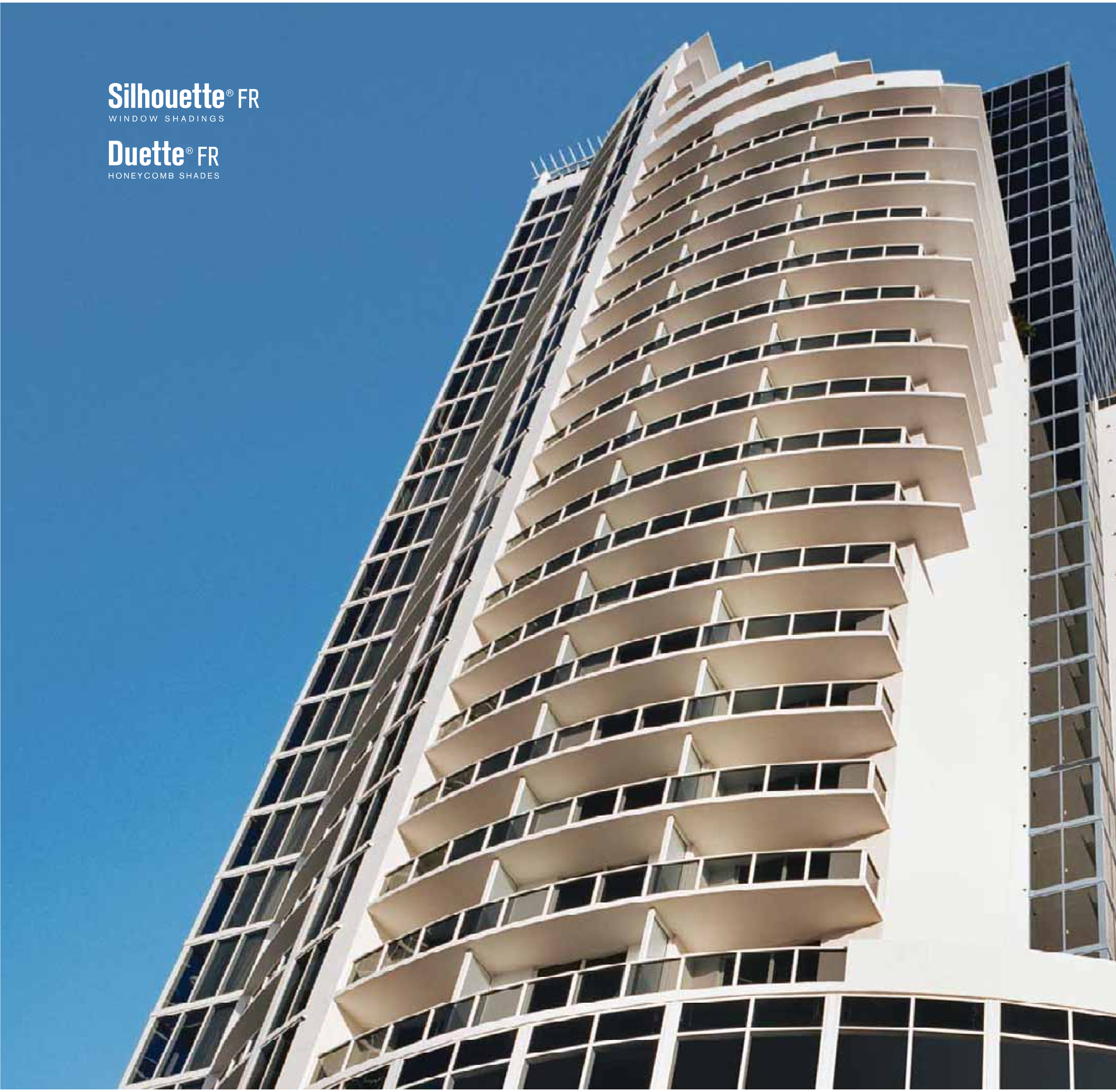
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Highlights

pp. 30–36 **Special Hurricane Report**
p. 36 **Power struggle heats up at Ground Zero**
p. 38 **Viñoly sued over Kimmel Center project**
p. 40 **Culture within steel mills in Bethlehem**

AIA Gold Medal, Firm Award go to Antoine Predock, Moore Ruble Yudell

Predock's McNamara Alumni Center in Minneapolis.

Antoine Predock, FAIA, has won the AIA's highest honor, the 2006 AIA Gold Medal, and California-based Moore Ruble Yudell Architects have won the 2006 Firm Award.

Predock, based in Albuquerque, New Mexico, becomes the 62nd AIA Gold Medalist. His work, which spans roughly 40 years, is inspired perhaps most by the country's rugged landscapes, with buildings that often emulate rock formations, combined with contemporary angular forms. Another major influence, says the architect, is the cultural landscape surrounding each building. Predock notes that poets, writers, painters, and dancers are some of his greatest influences, next to the likes of Louis Kahn and Frank Lloyd Wright. "We delve into everything about a site," he says of his firm's highly site-specific work, which he calls "episodic," and even "cinematographic."

Moore Rubell Yudell's Steger Student Life Center in Cincinnati.

One well-known project is the Minnesota Gateway in Minneapolis, whose facade seems similar to a large stone face. Its interior is highlighted by a public space formed by an irregular polyhedron of colliding granite planes and glazed fissures that allow sunlight to enter in sharp beams. The recently completed Flint RiverQuarium in Albany, Georgia [RECORD, May, 2005, page 218], merges the rocky geology of the city's Flint River with the building itself, formed with concrete and limestone blocks. Predock recently completed a new City Hall for Austin, Texas, and a new baseball stadium for the San Diego Padres. His office has just opened a branch in Taipei, Taiwan, and last month broke ground on the National Palace Museum in that city. The project, like much of Predock's latest work, is lighter, employing glass, steel, and bronze, and utilizing high-tech materials like photovoltaics throughout its meshlike facade.

Predock, born in Missouri, studied architecture at the University of New Mexico and at Columbia University. His firm has won numerous regional AIA awards, and he won the American Academy's Rome Prize in 1985 and the Chicago Architecture Prize in 1992.

Completing an honors lineup tilted toward the western states, Moore Ruble Yudell, headquartered in Santa Monica, has garnered acclaim for its humanistic, urban, welcoming, large-scale residential and mixed-use projects. The firm is led by partners John Ruble, FAIA, and Buzz Yudell, FAIA, and was established in 1977. An excellent example of the firm's work is the recently completed Joseph A. Steger Student Life Center at the University of Cincinnati [RECORD, August 2005, page 118]. Here, the firm created a lively, light-filled collection of spaces by carefully overlapping interior and exterior areas, and juxtaposing brick, metal, and concrete materials. The "Tango" Housing in Malmö, Sweden [RECORD, February, 2002, page 156] employs subdued massing and angular geometries to both mesh with its surrounding streetscape and add excitement to its interior courtyards.

The firm has also completed civic, cultural, institutional, and research projects. In addition to architecture, it provides interior and graphic design services.

Both the Gold Medal and Firm Award will be handed out at the AIA's Accent on Architecture Gala in Washington, D.C., on February 10. *Sam Lubell*

PHOTOGRAPHY: COURTESY AMERICAN INSTITUTE OF ARCHITECTS

Topaz Medallion and 25 Year Award complete major prizes

Topaz Medallion William McMinn, FAIA, will receive the AIA and Association of Collegiate Schools of Architecture (ACSA)'s 2006 Topaz Medallion for Excellence in Architectural Education. McMinn, 74, is best known as the founding dean of the architecture program at Florida International University. McMinn achieved full accreditation for the department from the National Architectural Accrediting Board (NAAB) and changed its status to a school of architecture in 1997. McMinn also served as dean of the College of Architecture, Art and Planning at Cornell and as NAAB president, and helped establish architecture programs in Jordan and Saudi Arabia.

25 Year Award This year's recipient of the AIA 25 Year Award is Thorncrown Chapel, designed by E. Fay Jones. The building is considered the most famous work by Jones, the highly regarded student of Frank Lloyd Wright. Located in Eureka Springs, Arkansas, the structure rises from a flagstone wall that nestles into an Ozark hillside. A rhythmic series of diamonds appears in a system of cross-lattice wooden members overhead, which are a counterpoint to the attenuated volume. These trusses also recall the intertwined tree branches viewed through the chapel's 425 windows. Jones passed away last year at age 83 [RECORD, October 2004, page 31]. *David Sokol*

SPECIAL HURRICANE REPORT

Mississippi charrette report is complete

Amid the bleak news from the Mississippi Gulf Coast comes a beam of optimism: the completion of a report on the mid-October planning charrette led by the state and the Congress for the New Urbanism (CNU) in Biloxi. The report, released in print on November 21, posits that the Gulf will emerge a better place, and that the nearly clean slate left by Hurricane Katrina offers the area an opportunity to be the first U.S. region “to arrive at the inevitable future” of sustainable development.

Mississippi Governor Haley Barbour gave Miami-based architect and planner Andres Duany the go-ahead to lead the charrette, which took place from October 11 to 18. One hundred and twenty members of CNU—designers, engineers, and other specialists—plus an almost equal number of Mississippi officials and professionals, gathered for a week to brainstorm ideas for resurrecting a 120-mile coastal region, including 11 cities.

Reconnect towns

The report first suggests reconnecting the Gulf’s towns and their region by turning Highway 90 into a beachfront boulevard, moving the CSX freight rail line to the north of I-10, transforming the abandoned CSX right-of-way into a boulevard for cars and transit, and creating a high-speed, east-west rail network linking the Gulf Coast with Mobile and Pensacola to the east and Baton Rouge or Houston to the west. Improved freight and passenger rail service, says the report, “has the potential to substantially bolster the economy and vitality of the Southern states.” As for roads: “There is a sense of urgency to restarting the local economy that can be assisted through strategic road and bridge projects.” Because “design matters,” all road, transit, and bridge projects “should pay attention to the details of place-making.”

Revive downtowns

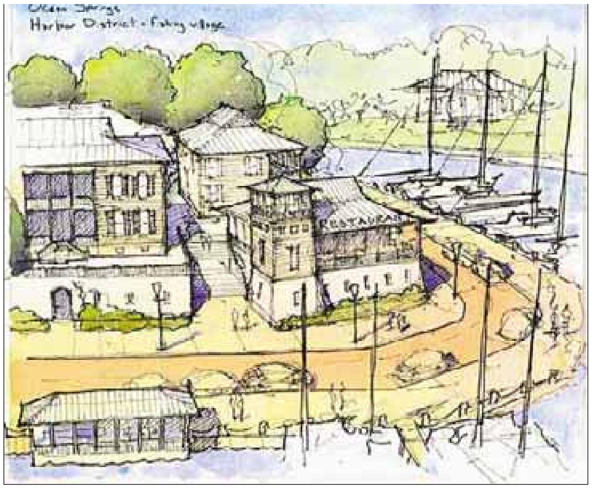
Beyond advocating such New Urbanist trademarks as pedestrian-friendly, mixed-use, and transit-based communities, the report suggests stopping the exodus of retail from historic towns. To revive downtowns, it suggests establishing business-improvement-district authorities. Historic buildings would be rebuilt or restored and form-based zoning codes and regulatory boards would be adopted. Coordinated leasing plans could be used to attract leading retailers and big boxes, and it has been suggested that new casinos could be located in downtown shopping districts, or linked to them. Overall, regional planning would be used to discourage sprawl.

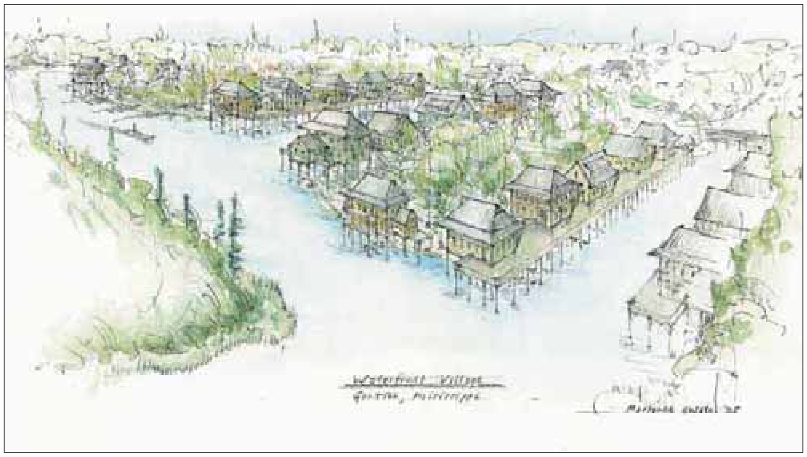
Housing issues

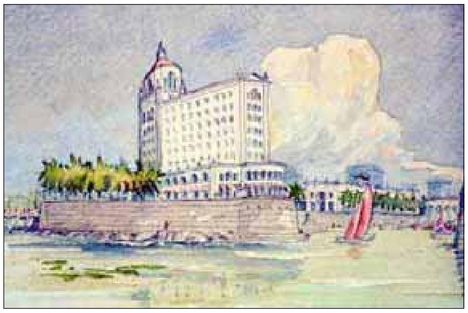
A section on housing options recommends that temporary buildings be designed so that they can later be made permanent, and points out that permitting needs to be expedited. Modular and prefabricated structures “with individual identity” could cut construction time, and that bringing manufacturers to the region could reduce costs and delivery times. Setting regional design standards for architectural detailing could enhance safety. The report also recommends appointing town architects to oversee the rebuilding. As a companion to the report, Urban Design Associates produced *A Pattern Book for Gulf Coast Neighborhoods*, a resource for homeowners, builders, and communities.

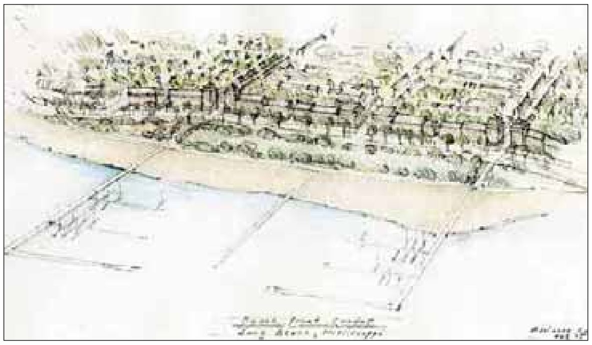
Flood control

The report also exhorts FEMA to replace prescriptive flood-control standards with performance-based principles, and offers some alternatives to expensive, “anti-urban” stilt houses. Recommendations include “submersible dwellings,” designed on raised porches using hurricane- and mold-resistant technologies and materials, and buildings with wide openings, tall ceilings, and appropriate ground-floor finishes that permit storm surges to flow through. These ideas are not universally accepted. Todd Davison, mitigation director for the Federal Emergency Management Agency, insists it is not possible to build beachfront homes or buildings that









Proposed plans include walkable, human-scaled downtown streetscapes (top), stilted housing developments (above), a raised casino (right), and development begun far from the coastline (below).

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SPECIAL HURRICANE REPORT

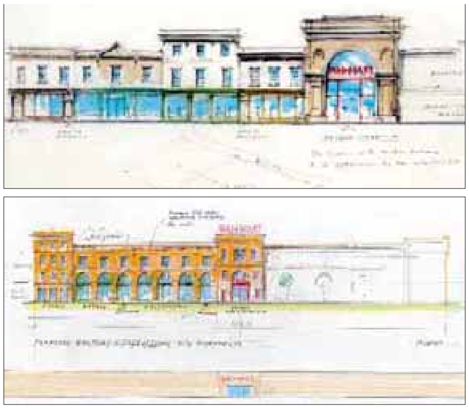
(continued from page 30)

can withstand a major hurricane without “ugly and expensive” pilings. Architect and urbanist Stefanos Polyzoides of Pasadena, California, who led a charrette design team for rebuilding Biloxi, told that city’s leaders, “You have two choices, as I see it. Either scrap Biloxi and move north, or create a town that can take a swim every 30 years.”

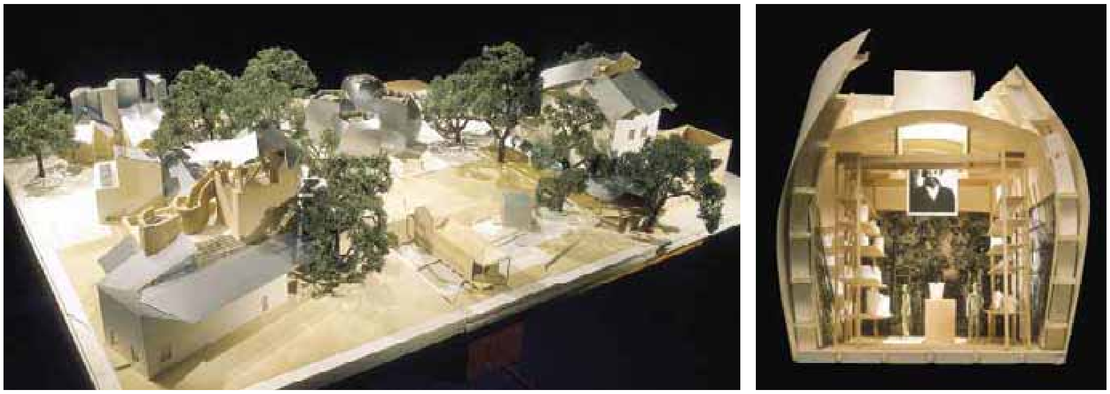
Time is of the essence, warns the document. The best policies, codes, and design criteria must be put in place quickly “so that redevelopment on an appropriate scale can take place just as quickly as sprawl development would.” The report says that mayors and other officials will have to take projects under their wing, the Mississippi Department of Transportation will have to be convinced to relocate roads and infrastructure, and builders and developers will have to be persuaded of traditional urbanism’s value. Finally, the report urges towns to stay in close contact with each other during planning and rebuilding, so that good “solutions can be duplicated elsewhere in the region.”

Resistance

Predictably, the CNU’s proposals have met heated resistance. Reed Kroloff, dean of Tulane University’s School of Architecture, criticizes a “pattern-book, cookie-cutter approach.” While agreeing with New Urbanist ideas about creating dense communities sensitive to transit issues, he asserts that “any ideas that can be boiled down to a set of guidelines don’t respond to the diversity of human nature and the needs of particular locations. Eric Owen Moss, director of SCI-Arc, says, “The New Urbanists have a priori answers before asking vital questions: What should the vision for this place be?” He points out that the New Urbanists’ small town model grew out of 19th-century conditions. “This is a very different time,” he says. “To assume that relatively small-scale groupings of people are ideal is to be conservative and pessimistic, believing that people want to live in homogeneous, no-risk, no-tension situations. The uncertainty quotient is a part of making cities.” Steve Badanes, a founder of the design/build firm Jersey Devil, says he disagrees with some aspects of New Urbanism, but says, “How can you knock a situation where the governor called in architects, rather than developers, to solve urban problems.” *Andrea Oppenheimer Dean*



Designers envisioned an area Wal-Mart built along the street line. Its traditional exterior and small scale would fit in with local neighborhoods.



The Ohr-O’Keefe was to feature pavilions topped with curved-metal roof, displaying pottery inside.

Fund established to save Gehry’s Ohr-O’Keefe museum in Mississippi

Friends of David Whitney, the respected art curator who died last June, launched a building fund in his honor at New York City’s Gagosian Gallery on December 9. It will aid reconstruction of the Ohr-O’Keefe Museum of Art, in Biloxi, Mississippi. The museum, designed by Frank Gehry, FAIA, was headed toward a July 2006 opening when it received substantial damage during Hurricane Katrina.

The centerpiece of the 25,000-square-foot museum comprised four podlike gallery pavilions to show the work of George E. Ohr (1857–1918), the famed “mad potter of Biloxi.” He is celebrated as one of America’s first ceramic fine artists. Ohr made the act of throwing pots a performance, producing colorful vases and bowls pinched and ruffled into shapes of impressive delicacy. Whitney was consulting curator for the museum’s inaugural exhibition when he died. He was also a prominent art collector, and the long-time life partner of architect Philip Johnson. “David was a great friend,” said Gehry, standing by an architectural model of the complex at the fund launch. “I will do whatever it takes to get this institution back on its feet.”

Gehry’s design included six twisting, metal-clad pavilions arranged around 26 ancient live oaks on a 4-acre site. The gallery “pods” are like curved silos, and the rest are boxy pavilions with overlapping curved-metal roofs. Gehry used elements found in local architecture, such as porches and open-air belvederes, on each pavilion.

A casino barge blown onshore by the storm crushed a pavilion devoted to African-American folk art and history. The unfinished gallery pods were seriously damaged. The storm also destroyed the Pleasant Reed House, an 1887 “shotgun” house that had been moved to the site. A center for ceramics, which included storm-resistant storage, was only slightly damaged. Pavilions designed to house artists-in-residence and education programs were also damaged. The Ohr pottery collection was off-site during the storm and was not harmed.

Insurance will cover much of the damage, according to Gerald O’Keefe, who was once the mayor of Biloxi and helped launch the museum with a substantial early gift. The David Whitney Fund will specifically aid the reconstruction of the gallery pods. The museum project was budgeted at $30 million. It is unclear how much additional money will need to be raised to upgrade storm resistance. The museum now expects to reopen in about two years. *James S. Russell,AIA*

IMAGES: COURTESY MISSISSIPPI GOVERNOR’S COMMISSION ON RECOVERY, REBUILDING, RENEWAL (TOP TWO); FRANK O. GEHRY AND PARTNERS (BOTTOM TWO)

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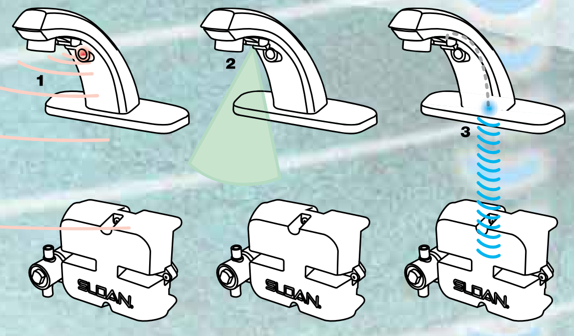

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SPECIAL HURRICANE REPORT

Louisiana passes new statewide building code; critics say it may burden home repairs

On November 29, Louisiana Governor Kathleen Blanco signed legislation for the state to adopt the International Building Code (IBC), a uniform code issued by the International Code Council that will replace a patchwork of municipal controls. The legislation requires that new construction adheres to the code, and that it be applied to home repairs if costs are more than 50 percent of prestorm valuation. After the bill was signed, the 11 parishes hardest hit by this season's storms had 30 days to start applying the code. Those without enforcement officials had 90 days. The code will take effect statewide on January 1, 2007.

Concerns about cost

While many applaud the adoption of a statewide standard for construction, industry experts say the adoption of the IBC will increase the spread between insurance payouts and repair costs, perhaps making it too expensive for many homeowners to rebuild. In the New Orleans suburb of Kenner alone, the Federal Emergency Management Agency says more than 500 houses meet the 50 percent test. Phil Hoffman, president of Hoffman Custom Built Homes in LaPlace, Louisiana, says due to the cost of bringing those homes up to code, "They might just as well bring in the bulldozers and knock it all down."

Louisiana parishes without existing codes will see the sharpest cost increase, says Ronnie Kyle, president of Louisiana Homebuilders Association. "Places like Cameron, which had no code, will have a 17 to 20 percent increase," he says. "Most of Orleans [Parish] was under at least a 1995 code, so it's probably looking at an 8 to 12 percent increase."

To make things more difficult for homeowners, Hoffman says, the code is "basically a wind code," addressing roofs, wind anchors, bracing, siding, and glazing, while most of the damage is from storm surge or flood. Insurance companies, says, Hoffman, "will only pay for the [flood] damaged areas of the house."

Benefits of uniformity

However, the insurance industry, building associations, and contractors say code uniformity for new construction is needed to woo insurers and secure federal funding. "Insurance companies have been taking a really hard look at whether they want to do business in Louisiana anymore," says John Marlow, assistant vice president for the Southwest Region of the American Insurance Association, a trade group.

The code's appeal is uniformity and insulation from ever-changing political influences, says Derrell Cohoon, executive director of Louisiana Associated General Contractors. "It will bring investors back and send a message that it's not business as usual in Louisiana."

Although the new standards will surely increase costs, "if you can't buy insurance, it doesn't do you any good to rebuild," says Kyle. "At some point, you've got to say the cost is what the cost is."

Under the law, the governor will name a 19-member code council to review the code every three years. Legislators have already planned the first review for March. Elsewhere in the region, Texas's June adoption of the IBC for municipalities goes into effect January 1. Mississippi building groups are lobbying a statewide adoption of the IBC, but the legislature is not in session until January 3. *Angelle Bergeron, with Tom Sawyer*

Rebuilding slowed throughout Gulf region

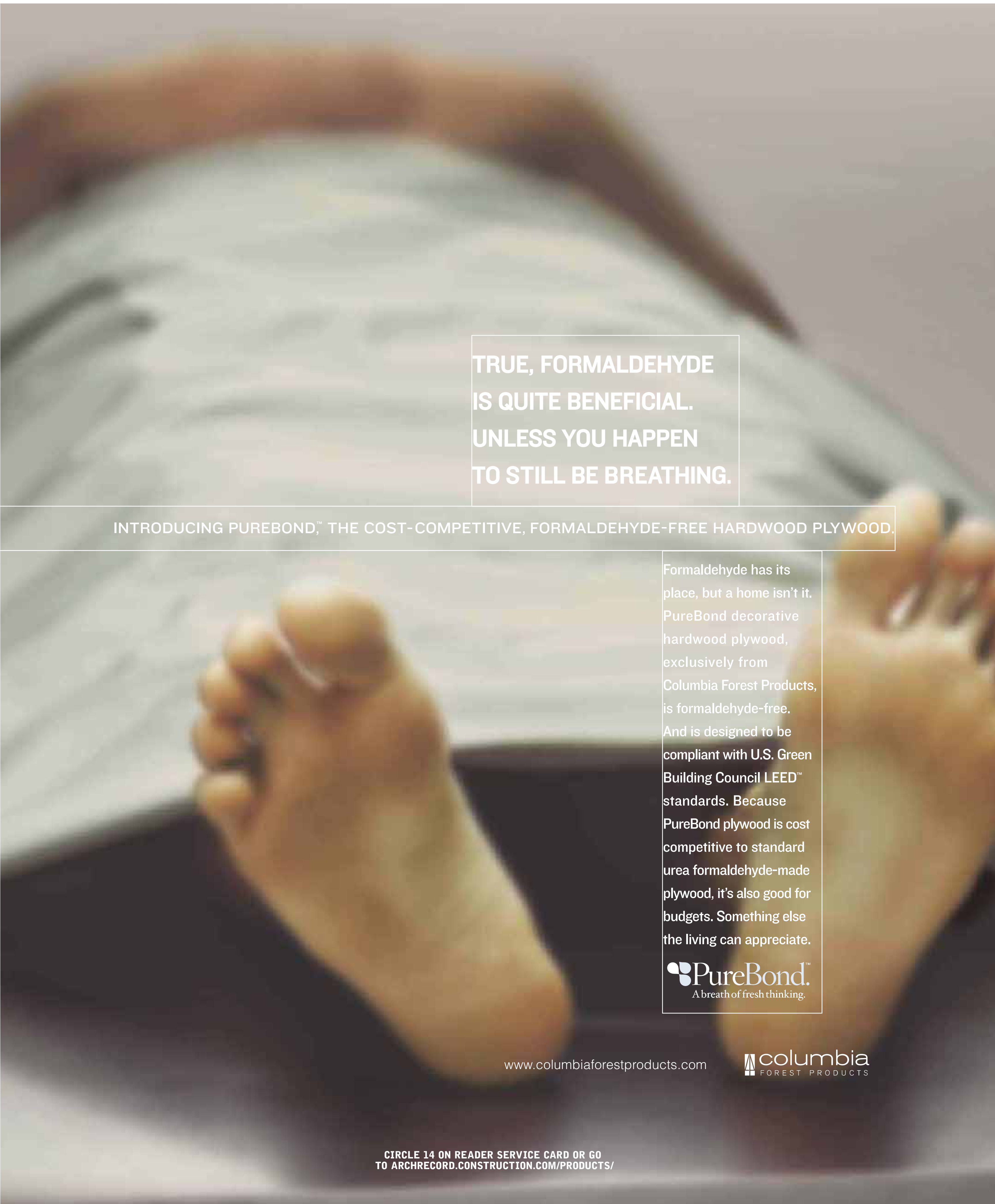
Most aspects of recovery in New Orleans and the Gulf Coast seems to be losing momentum, a development that could meet with tragic consequences. Besides political discord and a lack of funding for preservation, here are more reasons:

New Orleans: Levees People and businesses scattered around the country can't commit to rebuilding in New Orleans because Congress is still unwilling to underwrite a multibillion dollar levee upgrade that would resist a Category Five storm. Large-scale private investment that would lure people back will probably not occur unless Congress writes the check. Nor will the levee investment make sense, it seems, if there is not a coordinated investment in reworking the entire lower Mississippi flood-control system. The levees will remain vulnerable if the river cannot flood lowlands and supply silt to rebuild fast-retreating coastal marshes and barrier beaches. The total price tag may hit $30 billion.

Gulf Coast: Flood resistance On the Gulf, repairs appear to be progressing more quickly, partly because the coast was not inundated as long as New Orleans. But an impasse to coastal rebuilding may arise as local governments resist provisional Federal Emergency Management Agency (FEMA) maps that vastly expand the territory in which structures may have to be made flood-resistant. In some areas, the maps require that homes be raised above storm surge waves as high as 20 feet. Those requirements raise the cost of rebuilding, and the increased cost is usually not covered by insurance or disaster aid. However, complying with FEMA requirements qualifies homeowners for federally underwritten flood insurance, which can be essential to secure a mortgage. Katrina's flood-insurance claims may reach $23 billion, perhaps triggering a congressional bailout of the flood-insurance fund.

Entire region: Housing FEMA's trailer program, to provide temporary housing in the region, has been slow to get under way, especially in New Orleans. With much of the city lacking basic utilities, FEMA has been unable to deliver trailers to peoples' properties because they need hookups. It has tended instead to create "FEMAvilles"—large encampments of trailers on open sites, often in remote locations, that the agency's contractors can more quickly supply with sewer, water, and electricity. Opposition has slowed the building of these enclaves because neighbors view them as instant slums, concentrating the unemployed and disconnecting people from schools, jobs, families, and social institutions. Meanwhile, FEMA's program of housing people in hotels while they relocate or rebuild was supposed to end November 30. After thousands failed to find temporary housing, the deadline was extended to December 15, and even January 7 for some. A federal judge told FEMA to continue the hotel program until at least February 7 for 42,000 more evacuee families. Almost 85,000 applications for aid were pending at press time.

The Enterprise Foundation, which devotes its efforts to affordable housing, says the federal government should commit $33 billion to fill the gap between total permanent housing losses (on the order of almost $87 billion) and the amount that insurance and other sources will pay out. Meanwhile, until now homeowner loans have been virtually nonexistent. *James S. Russell, AIA*



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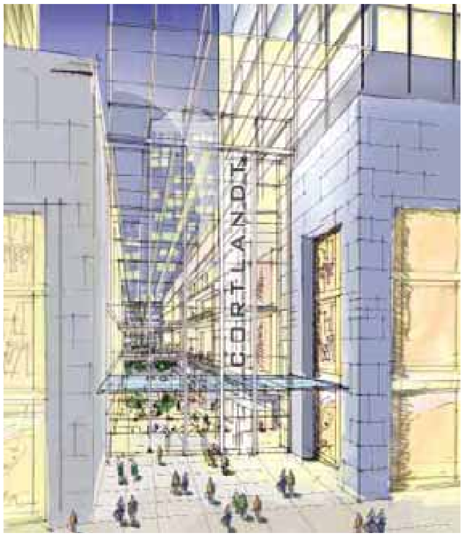
Progress moves slowly at Ground Zero as political power struggle heats up



The Port Authority's commercial space at Ground Zero would sit at the base of towers 1, 2, and 3.

This fall, progress on a few construction projects at Ground Zero continued to crawl, while the real action seemed to be in the offices of local politicians. New York City Mayor Michael Bloomberg appears to be getting ready for a fight with New York Governor George Pataki over the fate of proposed office space here. Meanwhile, the Port Authority of New York and New Jersey, which owns the property, continues to assert itself.

Work on Santiago Calatrava's transit station has just gotten under way, while the World Trade Center Memorial Foundation, which oversees funding on the memorial and cultural buildings, on December 5 announced that it had issued a request for proposals for a memorial construction manager. The toxic Deutschebank Building to the south is slowly being dismantled to make way for park and office space. On November 29, Goldman Sachs broke ground on its Pei Cobb Freed Partners–designed headquarters, just northwest of Ground Zero, and on December 15, developer Larry Silverstein announced that Norman Foster would build the third office tower at Ground Zero, on the eastern edge of the site, at 200 Greenwich Street. Completion is scheduled for 2011. That same day, the Lower Manhattan Development Corporation (LMDC) approved allocating $200 million in funding to the WTC Memorial and Museum.

But most dramatic is the developing struggle between Bloomberg and Pataki. During his first term, Bloomberg mostly deferred to Pataki regarding development at the World Trade Center site. He changed that stance in late October, just before his reelection, when he told the *New York Daily News* editorial board that he would prefer to see more residential development on the site. The site is now slated to include about 10 million square feet of office space. Bloomberg also told the board that the city would be better served by removal of Silverstein, who owns the right to build the Pataki-backed Freedom Tower. In mid-November, Bloomberg named six new members to the LMDC board of directors. Four of them are senior advisers to the mayor. Pataki subsequently appointed three of his backers to the board. The LMDC is a joint state/city corporation that oversees rebuilding in Lower Manhattan. Its board has 16 members, eight appointed by the mayor, and eight by the governor.

Pataki has since backed away from his long-held position that all of the space lost when the World Trade Center towers collapsed should be rebuilt, telling the *Post*, "I don't know that 10 million is the magic number. I'm not going to project where things might be with office space demand, in five, 10 years from now."

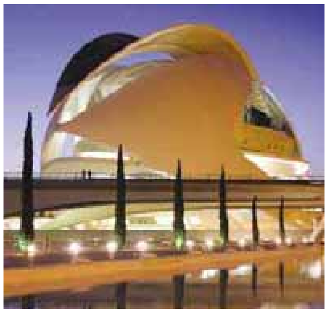
As the mayor and governor positioned themselves for a face-off, the Port Authority of New York and New Jersey (PA) has been flexing its own muscles. In mid-November, the PA said it will reduce the size of the chiller plant it is constructing to service the site. This means that Silverstein will have to construct his own chillers to service the Freedom Tower and other office buildings at the site, increasing the cost for his project reportedly by as much as $100 million. A few days later, the PA released plans to develop up to 550,000 square feet of retail at the Trade Center along Church Street, at the bases of towers 2, 3, and 4, which have yet to be designed. The development would replace the World Trade Center's original retail mall, which, PA chairman Anthony Coscia pointed out in a statement, "was one of the most successful in the country." At the same time, the PA offered to assume control of construction of the World Trade Center Memorial, and to cover any cost overruns. The offer would streamline building on the complex PA-owned site. But some point out that the WTC Memorial Foundation's fund-raising efforts would be hurt if the public perceives that the memorial's costs could be absorbed by the PA. Others say it would be unwise for the foundation to give up control over the construction, even as cost estimates have gone as high as $800 million. *S.L., with Charles Linn, FAIA*

Just Opened ...

Turning Torso, Malmo, Sweden This 54-story residential tower, designed by 2005 AIA Gold Medalist Santiago Calatrava, FAIA, features nine rotating box units that turn 90 degrees from base to summit. The rumor mill suggests that Calatrava will be asked to design a similar structure in Las Vegas.

Valencia Opera, Valencia, Spain Santiago Calatrava's opera house, located on the western edge of his massive City of Arts and Sciences in Valencia, is the complex's final piece. The spherical, white concrete design resembles a space helmet, and was completed this fall. Although its inaugural concert took place then, the building won't officially open until next year.

Getty Villa, Los Angeles The fabled Roman-style villa, which was the original J. Paul Getty Museum, reopens January 28 following a major renovation by Machado & Silvetti; SPF:architects served as the architect of record. The museum has a new mission as an educational center and museum dedicated to the study of the arts and cultures of ancient Rome, Greece, and Eritrea. The museum has new galleries, a new auditorium, a new outdoor theater, new office space, and is now seismically protected by a steel support system. *S.L.*



Turning Torso (left); Valencia Opera (above); Getty Villa (right).

IMAGES: COURTESY PORT AUTHORITY OF NEW YORK AND NEW JERSEY (TOP); SANTIAGO CALATRAVA S.A. (BOTTOM LEFT AND CENTER); J. PAUL GETTY MUSEUM (BOTTOM RIGHT)

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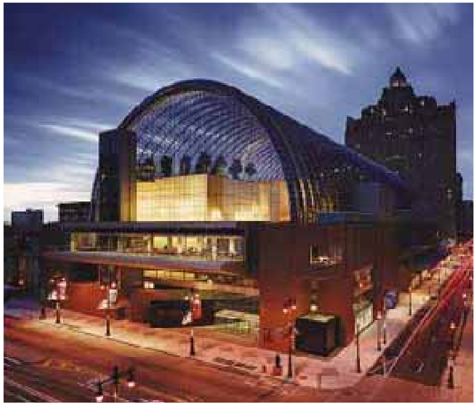
Viñoly sued over alleged Kimmel Center design flaws



The Kimmel, with its glass-barrel-vaulted exterior (left) and cello-shaped main performance hall (above), has been a hit in Philadelphia. But it's facing a budget crisis.

PHOTOGRAPHY: © JEFF GOLDBERG/ESTO (TOP); COURTESY RAFAEL VIÑOLY ARCHITECTS (BOTTOM)

On a Friday night in December 2001, Philadelphians gathered to celebrate the opening of the Kimmel Center for the Performing Arts, the new home for their beloved Philadelphia Orchestra. But four years after the opening, the center is struggling to remain afloat with the burden of a $30 million bank loan debt: $23 million from construction overruns and $7 million from funding shortfalls.

To help alleviate the issue, the Philadelphia Regional Performing Arts Center, which manages the Kimmel, is suing the building's architect, New York–based Rafael Viñoly Architects (RVA), over what it alleges—in its 28-page complaint filed on November 23, 2005, in Philadelphia's United States District Court offices—are costs resulting from "deficient and defective design work" at its hands.

The complaint concludes that "most, if not all, of the cost overruns" were "the result of [Rafael Viñoly Architects'] performance on the project." It states, "The construction cost $180 million, which was significantly more than the $157 million originally budgeted for construction."

Costs shot up, the document says, when steel erection was delayed by 16 months, threatening the center's long-planned opening. The shorted time frame prompted overtime filings from workers, and costly charges for expedited manufacturing services.

The complaint alleges that documents were late, inaccurate, and incomplete; that design work was inadequate; and that equipment underperformed and required repair or replacement. The complaint states that RVA broke its contractual promise to correct—at no cost to the Kimmel—any defects in design or in specification.

Because the case is still pending, neither party would comment directly on the matter. Viñoly's office released a statement saying that it was "extremely disappointed" by the complaint, adding, "The same people who praised the building are now criticizing it. We feel the claim is unsubstantiated."

The 425,000-square-foot, glass-barrel-vaulted performing arts center, which contains three theaters, is located on Broad Street in Center City Philadelphia. Today, the center—which has spearheaded a transformation of Philadelphia's cultural life and civic identity—struggles to pay the $2 million annual bank loan fee servicing the $30 million debt from construction overruns and from falling short of fund-raising goals. A December 14 story in *The Philadelphia Inquirer* noted that this debt is compromising the center's ability to amass an endowment and develop top-level programming.

The case goes to trial on January 28, 2006, and comes after the Kimmel's 30-month effort to resolve the matter with RVA failed (an effort it charges in the complaint that the firm stalled by its delays in attempting to find counsel). The suit could open up many issues about an architect's financial and legal accountability for construction overruns.

Joseph Dennis Kelly II

Architect starts "university" in his offices

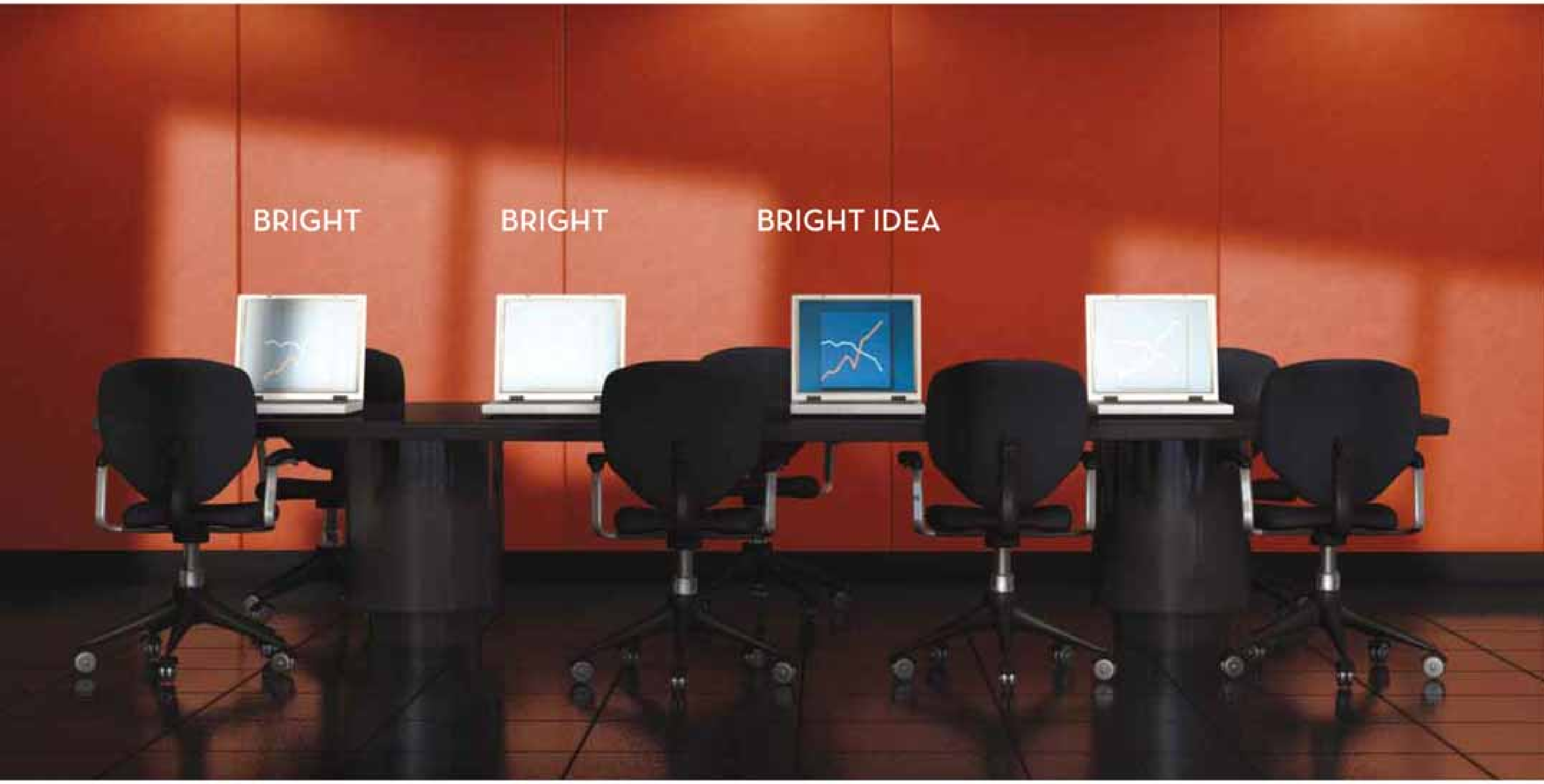
Rafael Viñoly (discussed in the story above) has developed a 14-week training course for architecture students and young practitioners. He is teaching it from his office.

The course, which began in September with two-hour weekly sessions, attracted 53 applicants worldwide. Viñoly handpicked the 19 participants, who range from students enrolled in architecture schools to architects starting their own practice, based on the quality of their portfolio and applications. The participants are not employed by Viñoly and do not pay a fee for the course.

Why would an architect, with a busy schedule and projects around the globe, take on such a course? "There is a need to address the questions of people coming into the workforce, to offer a pragmatic set of techniques that can be explained and taught," says Viñoly.

The course covers topics including strategic thinking, getting and executing projects, the design process, recognizing architectural ideas, self-criticism, time management, defining an ideological base, and positioning a practice. The program is an opportunity for Viñoly, who has taught at Yale and other schools, to teach within the setting of his office rather than in university studios that seem far removed from practice. Frances Gretes, director of new business for Rafael Viñoly Architects, observed, "He learns a lot when he teaches. He has really articulated a lot of his philosophy (in the course)."

Viñoly expects to conduct the program annually. More information on the course is available at the Web site, www.rvatr.com. *John E. Czarnecki, Assoc. AIA*



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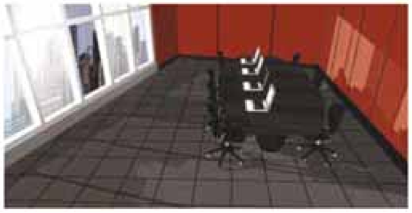

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Bethlehem group hopes to develop arts center within city's old steel mills

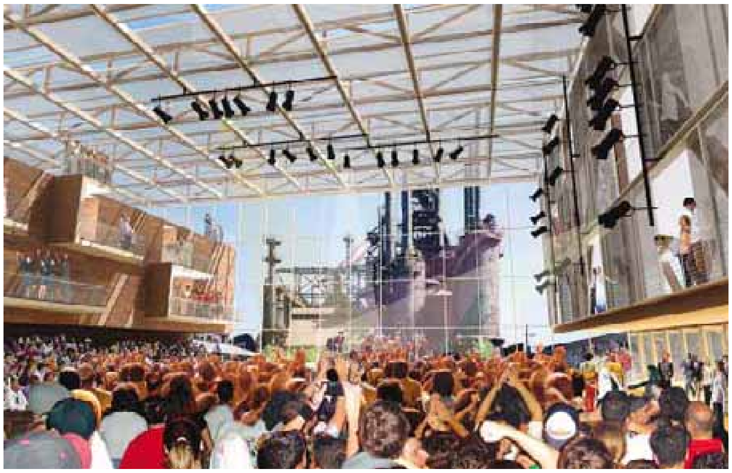
In 2003, the once-great Bethlehem Steel Company closed its doors for good, ending, some said, the industrial age in America. Now, those doors may open to the age of culture, as a proposal is being developed to make the steel mills the backdrop for a new city arts center called SteelStax.

The 200,000-square-foot facility, designed by New York–based Rockwell Group with Boston-based Design Lab Architects, will be woven in, under, and around the monumental mill structures. A 50,000-square-foot Festival Hall, which will seat up to 3,000 people for music and large events, will use the main blast furnace as its backdrop, revealed via a glass curtain wall at the back of the facility. Other venues will include a 500-seat performing arts theater, a 300-seat music venue, and 25,000 square feet of performing arts education space.

The project is being developed by the local nonprofit cultural foundation Artsquest, the Pennsylvania Youth Ballet, the Pennsylvania Youth Theater, and the Hispanic American League of Artists. The 3.5 acres of land for the project was donated by BethWorks Now, a developer that is hoping to build a commercial and residential complex on the mill site. No funding has been secured, but the team has assured seed contributions from local donors, and hopes soon to attract government arts grants. Officials say they cannot discuss the project's price tag at this point.

Rockwell Group principal David Rockwell says the buildings, mostly cubes (although he's not "ruling out anything rounder"), will feature a similar industrial aesthetic to the mills; they will be clad in both steel and masonry, for instance. They will not, however, try to compete with the size and scale of the gargantuan mills, which Rockwell likens to the "Grand Canyons of industry."

Building next to the massive furnaces and forges of these industrial icons will present some challenges, Rockwell acknowledges.

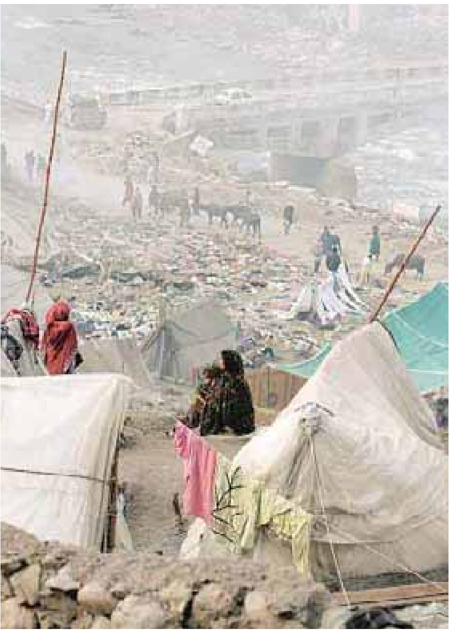

The Festival Hall would seat up to 3,000, with the mills as its backdrop.

Much of the project is adjacent to an elevated train track that runs through the mills, and the buildings will likely be elevated to lessen vibration issues.

Rich arts scene in Bethlehem

In recent years, the arts community has taken off in this town, known for so many years for its steel production. ArtsQuest president Jeff Parks says that the city already has 1,200 arts students taking part in arts after school and summer programs. His organization's "Banana Factory," an old distribution facility turned arts facility, holds space for artists' studios and performing arts groups, while "Summerfest," a yearly festival, hosts 500 bands and about a million people per season. Much of Summerfest's performances would take place in Steelstax, says Parks.

Completion is set for 2008. Rockwell admits this is an ambitious date, but people in this once-great steel town are eager to move forward, especially after plans for such a facility have stalled numerous times. BethWorks Now is currently on hold pending a state decision on whether to allow gambling on the site. The mills themselves are set for renovation, a separate project that is still in early discussions. *S.L.*


Earthquake refugees in Balakot, Pakistan, cannot protect livestock.

Architects create animal shelters in Pakistan earthquake zone

In the aftermath of the devastating earthquake in Pakistan and India last October, Architects for Aid (A4A)—an organization that helps improve the design and management of disaster shelters—recognized that since many of the area's inhabitants are dependent on animals to survive the winter, destruction of livestock shelters and veterinary facilities could worsen the crisis. The organization joined with the World Society for the Protection of Animals (WSPA), and in late November sent Sam Price of London's UV Architects to Pakistan to develop prototype animal shelters.

Together, the parties developed small, lightweight frame structures designed for easy transportation, fabrication, modification, and replication. About 20 have been built so far. Using readily available materials, such as corrugated galvanized iron for roofing; woven grass reed or canvas for walls; and reclaimed rubble for foundations, the structures provide animals with protection and insulation. They also ventilate the heat produced by larger animals. The shelters are designed to hold up to three buffalo, eight sheep or goats, one horse, and 20 chickens.

While dispatching more volunteers for the animal shelter project, A4A, which was formed in 2004, is working with organizations such as the U.N.'s Habitat and Shelter Center and Registered Engineers for Disaster Relief (RedR) to promote disaster-preparedness among architects. On the whole, the field has been criticized for its slow response to events like the Southeast Asian tsunami and Hurricane Katrina. Consequently, A4A has begun creating a registry of trained professionals ready to travel to disaster sites as well as an online repository for knowledge on structural emergency work.

"The life cycle of a humanitarian aid worker is often about 5 years, so there is an inevitable relearning process that must regularly occur. This should be mitigated and the expertise retained," says Dr. Victoria Harris, managing director of A4A. More information is available at www.architectsforaid.org. *Nick Olsen*

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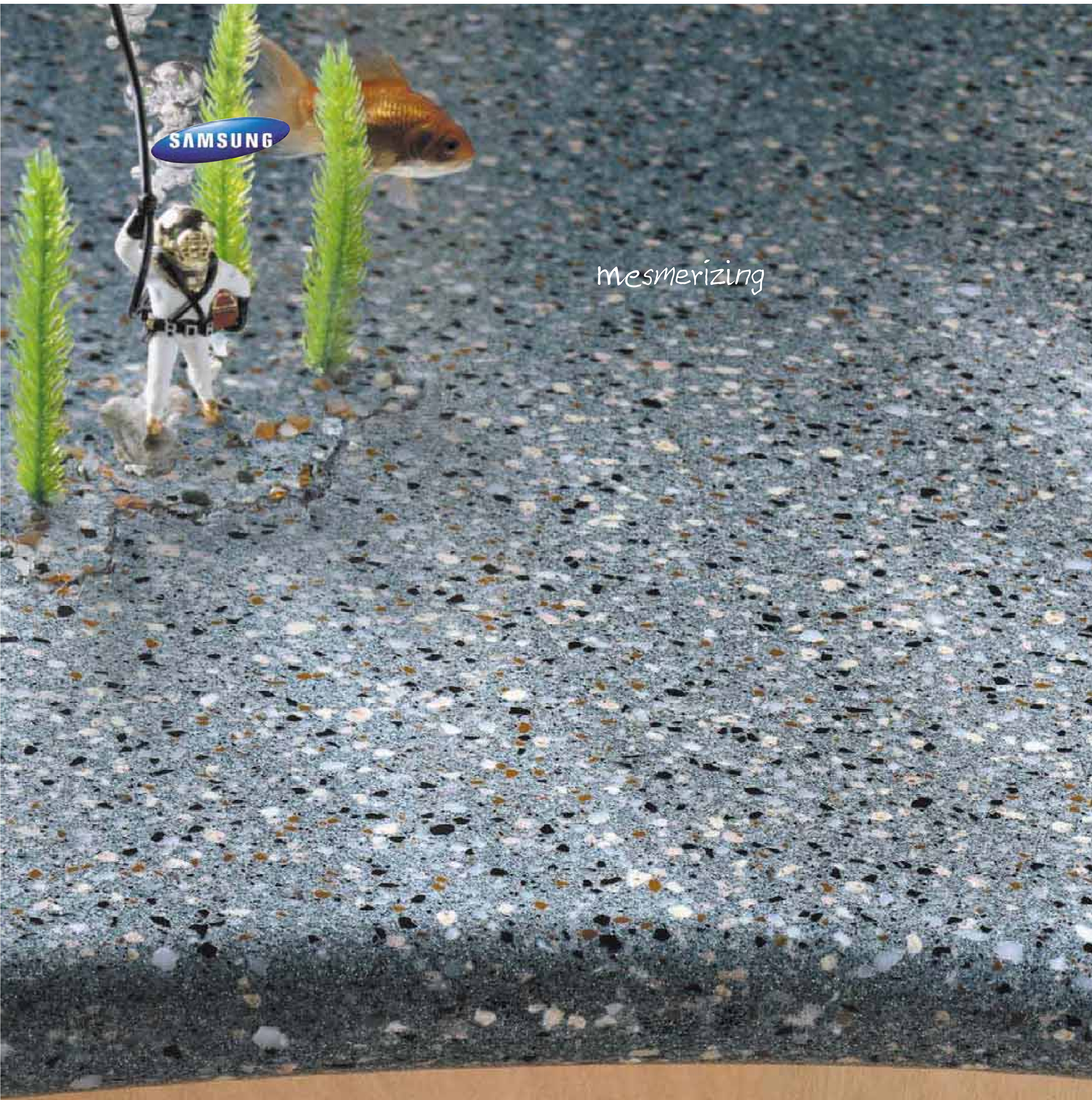

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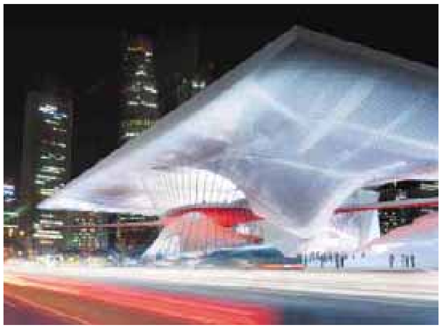
Coop Himmelb(l)au directing cinema complex in Korea



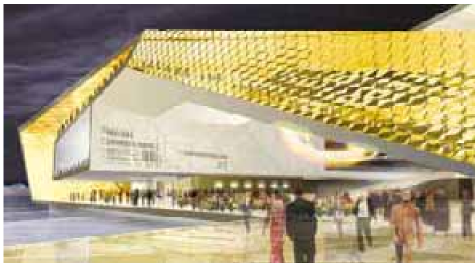
The Pusan International Film Festival has selected Austria-based Coop Himmelb(l)au to design its 430,000-square-foot PIFF Cinema Complex and urban plaza in Pusan, South Korea. The firm, led by architects Helmut Swiczinsky and Wolf D. Prix, envisions a structure with a swooping, metal-clad roof imbedded with a LED smart skin on both sides, acting as film screens. Images can be projected from below for visitors inside the complex to view, but also from above so they appear on the roof for viewers to see from surrounding structures.

The "flying building," as Prix calls it, will include six cinemas, an exhibition hall, and an entry plaza that allows guests to arrive by boat. The project will also include a valley, a small canal park, a red carpet zone, and a walk of fame.

Coop Himmelb(l)au completed another Cinema Center, the UFA Center in Dresden Germany, in 1998. This will be the firm's first Korean project. Construction has not begun, but Prix is planning to have the center completed in time for the 2007 film festival. *Sarah Cox*

IMAGES: COURTESY COOP HIMMELB(L)AU (TOP); HENNING LARSENS TEGNESTUE (BOTTOM)

Henning Larsens Tegnestue building concert center on fishery site



In Reykjavik, Iceland's waterfront, violin strings are replacing fishing lines. This fall, the city (along with the national government) selected Henning Larsens Tegnestue in an invited competition to design the Icelandic Congress and Concert Centre, on the site of a decommissioned fishery.

The 250,000-square-foot building comprises an 1,800-seat concert and a 450-seat rehearsal hall, as well as a conference room holding 750 people. The spaces are contained in two irregularly shaped volumes that follow the path of the shoreline.

Concertgoers will approach via a curved path intended to shield them from Faxaflói Bay's whipping winds. Extensive glazing in the multilevel foyer will provide views of the city, Mount Esja, and the glacier at Snæfells Jökull. Other elevations will be clad in prisms and mirrors that reflect changes in weather and interior lighting. The facade is being designed by artist Olafur Eliasson, who collaborated on Larsen's Copenhagen Opera House.

Just outside, a new public plaza will feature cauldrons of geothermally heated water, enshrouding the crystalline structure in steam.

The commission is part of a $190 million redevelopment of the East Harbor district. The hall is scheduled to open in 2009. *David Sokol*

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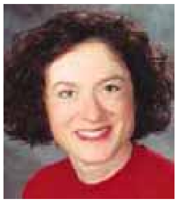
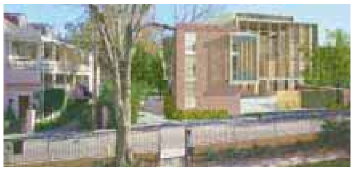
AIA names first female C.E.O. Christine McEntee has been named the AIA's first female executive vice president and chief executive officer, succeeding Norman L. Koonce, FAIA, who retires on December 31. McEntee, whose tenure becomes effective February 1, 2006, formerly served as C.E.O. of the American College of Cardiology. She is credited with increasing that organization's revenue by $18 million annually and growing membership to 33,000 during her seven-year term.

"I am extremely energized to be working with such a dedicated cadre of professionals who are deeply committed to making lives better through spaces and environments," says McEntee. Koonce, her predecessor, who had been AIA C.E.O./E.V.P. since 1999, wanted a break to turn his attention to issues of "exploring the power of architecture to elevate and enrich the human experience," while also spending more time with his family. Koonce established closer working relationships between local, regional, and national AIA components, and increased association membership 12 percent, to 74,000 in 2004. *Tony Illia*


New AIA C.E.O. Christine McEntee.

Modern building draws ire in Charleston Boston-based Kennedy + Violich Architecture's design for the new Clemson Architecture Center in Charleston, South Carolina, has drawn intense criticism from preservationists and neighborhood activists. One letter to the *Charleston Post and Courier* said the building's design "is obviously copied from one of the worst periods in American architecture, the 1960s."

The satellite campus building, located in the historic Ansonborough neighborhood, includes gallery, classroom, and studio space for design students. The city's Architectural Review Board has supported the design, though final approval isn't expected until March. Clemson's archtiecture dean, Janice Schach, says that Clemson understands the traditional atmosphere in Charleston, and hopes to enrich preservation dialogue. "We're willing to be flexible on form, height, massing, and materials, but we will not mimic historic styles," she says. *Alan G. Brake*


A rendering of Clemson's Architecture Center in Charleston (above, at right).

Agreement with international architects At the Architects Council of Europe (ACE) General Assembly, held in Luxembourg on November 18 and 19, ACE, the National Council of Architectural Registration Boards (NCARB), and the AIA signed an agreement for "mutual recognition of professional qualifications between architects of the European Union and the United States." With such recognition, says Ellen Delage, AIA director of international relations, qualified U.S. architects with at least seven years of substantial post-licensure experience would be considered eligible to apply for a license to practice in Europe (and vice-versa). The agreement comes after about five years of negotiations between the signatories. It is the first mutual recognition of professional credentials to be signed between representatives of the E.U. and the U.S.

ACE has ratified the agreement; AIA officials expect that the NCARB and AIA boards will ratify it later next year. Then, a final legal agreement would be negotiated for adoption by the European Commission and U.S. jurisdictions. *S.L.*

IMAGES: COURTESY AMERICAN INSTITUTE OF ARCHITECTS (LEFT); KENNEDY +VIOLICH ARCHITECTURE (RIGHT)

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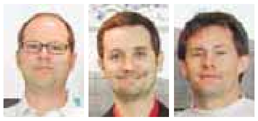
For and about the emerging architect

archrecord2

We begin the year with concepts that define future ways to work as architects and at home. First, in Design, a trio of architects is pooling their resources under an umbrella called Flux, offering clients multiple brainpower for innovative design. Then, in Work, we give a hearty nod to appliance giant Electrolux, who is challenging students worldwide to design home appliances for the future.

Design

Flux: Three heads are better than one

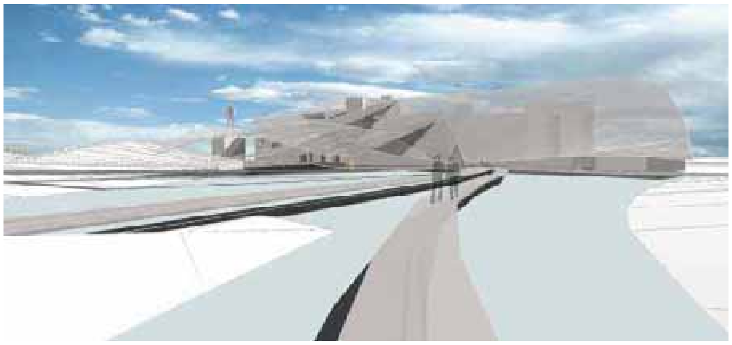


Architects Michael McDonald, Darin Johnstone, AIA, and Scott Parker (left to right, at left) were busy working on individual projects and teaching at SCI-Arc and other colleges in Los Angeles when these pages inspired them to take their endeavors a step further, or, rather, a few steps closer together. "We saw that many of the Vanguard firms were collaborations," says Johnstone. "We were working that way anyway, and that became the impetus to create Flux as an umbrella for a body of work created under a series of partnerships involving the same key players."

Pooling knowledge has given the three architects a wealth of resources to draw on, a larger portfolio, and a fresh enthusiasm for finding new work. As solo practitioners Johnstone and Parker have collaborated as delineation.spatial design and Johnstone Parker Architecture, while Johnstone also works alone as Darin Johnstone Architecture, and with McDonald as Johnstone+McDonald Architecture. McDonald runs architecture/industrial design firm Park-McDonald with his wife Alice, and Parker works for Los Angeles firm Bauer and Wile. If that weren't enough, the three architects, as Flux, have even approached a business owner to invent a project. "It almost turned into real work for us," says Parker. "Our pretend client decided to expand, and at that point our designs became valuable investigations." Although that particular project never got legs, Flux has attracted the attention of some real clients, including giant urban planning and landscape architecture firm SWA Group, which became interested in finding out what three talented designers can do when they put their heads together. SWA Group is creating a 1-million-square-foot development on a small island between historic Qingpu Island and Zhujiajiao off the coast of Shanghai—a project that could potentially serve as a kind of cultural hub for the region. Flux was asked to adapt an old cement factory in the area, and soon became involved in a larger zoning strategy that calls for a park, residential district, and a cultural center in the rehabilitated factory.

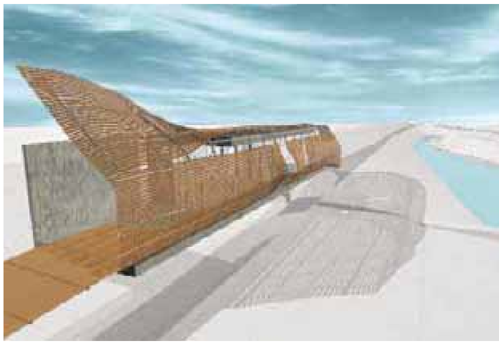
"Projects have come to us through random introductions," says McDonald, who with his partners admits that partnerships, affiliations, collaborations, and skills have ebbed, flowed, and emerged into the coherent body of work that is Flux. "More of the same randomness would be ideal," says Johnstone. *Ingrid Spencer*

For more information on Flux, go to *archrecord.com/archrecord2/*

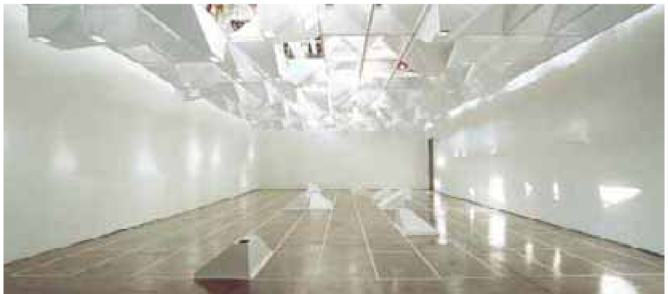


Qingpu Cultural Center, Shanghai, China, conceptual design
An adaptive reuse of an abandoned cement factory on a triangular island expanded to a strategy to develop a park, residential district, and cultural center.

Qingpu Pagoda Park, Shanghai, China, bidding
Four pavilion/teahouses in a park surrounding a 100-year-old pagoda are nodes along a path, orienting visitors toward the pagoda, which is a vertical moment in a horizontal context and serves as a marker along a water gateway to the district.



Drop, Hi-Lo Fielding, Los Angeles, 2004
A gallery installation at SCI-Arc, this project encourages indeterminate spatial experiences from interactions with drop-ceiling units, which changed according to options executed in series and by chance.



IMAGES: COURTESY FLUX

Work

Students envision appliances of the future

“One of the biggest mistakes a company can make is to stop listening,” says Henrik Otto, global design director of Electrolux—the world’s largest manufacturer of home appliances. Indeed, since 2003, this Stockholm-based corporate giant has sponsored a competition inviting design students to submit their visions of future home appliances. “Students don’t have preconceived notions as to what you should or shouldn’t do,” says Otto. “Consequently, they throw us into new thought processes.” Initially a European initiative, Electrolux Design Lab 2005 attracted 3,058 entries from over 88 countries. Their challenge was to create a total appliance concept for the year 2020 based on evolving consumer needs and trends. Twelve finalists were selected to develop their ideas—produced as prototypes by Electrolux. The group was then hosted at a series of events in Stockholm concurrent with an exhibition at the *Future Design Days* conference in November, where the winners were announced.

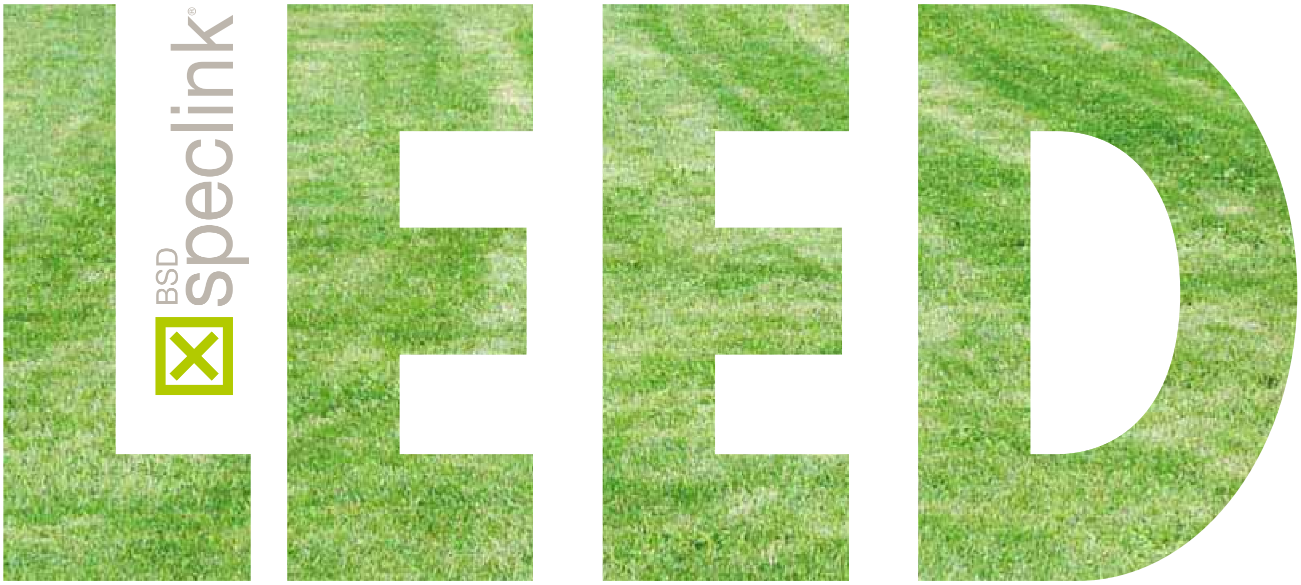
Modularity, adaptability, sustainability, and compactness were the salient principles inherent among the final dozen—all worthy candidates for the top prize, according to Otto and fellow judge panelists New York MoMA curator of architecture and design Paola Antonelli; kitchen designer and architect Johnny Grey; creative consultant Ilse Crawford; Bentley head of exterior design Raul Pires; and C.E.O. of China Bridge International Cathy Huang. An “Electro/House” kit from Colombia, Digital Placemats from Brazil, vacuuming slippers from Spain, and an odor-removing Oxygenating Coat Hanger from the U.S. were among the unique solutions.

Winners were Airwash *(above left),* The Flavor of Sunshine *(far left), and* Happy Feet *(above right).*

Ultimately, an innovative *Airwash* clothes-cleaning system, by Wendy Chua and Gabriel Tan from the National University of Singapore, captured first prize for its sleek, intuitive format and no-chemical/no-water approach to fabric care that could eradicate traditional dry cleaning. *The Flavor of Sunshine*, an aesthetically balanced washer/dryer combo by a team of Chinese students from Zhejiang University landed second place for its ability to wash, spin, and “sunbake” clothes dry through a nature-simulating process. Third prize went to *Happy Feet*, a device purporting to remove odors, and clean and sterilize the inside of shoes and sneakers, by students at Korea University of Technology and Education in South Korea. *Linda C. Lentz*

For finalist information and to find out how you can participate in the 2006 Electrolux competition, go to archrecord.com/archrecord2/

PHOTOGRAPHY: COURTESY ELECTROLUX



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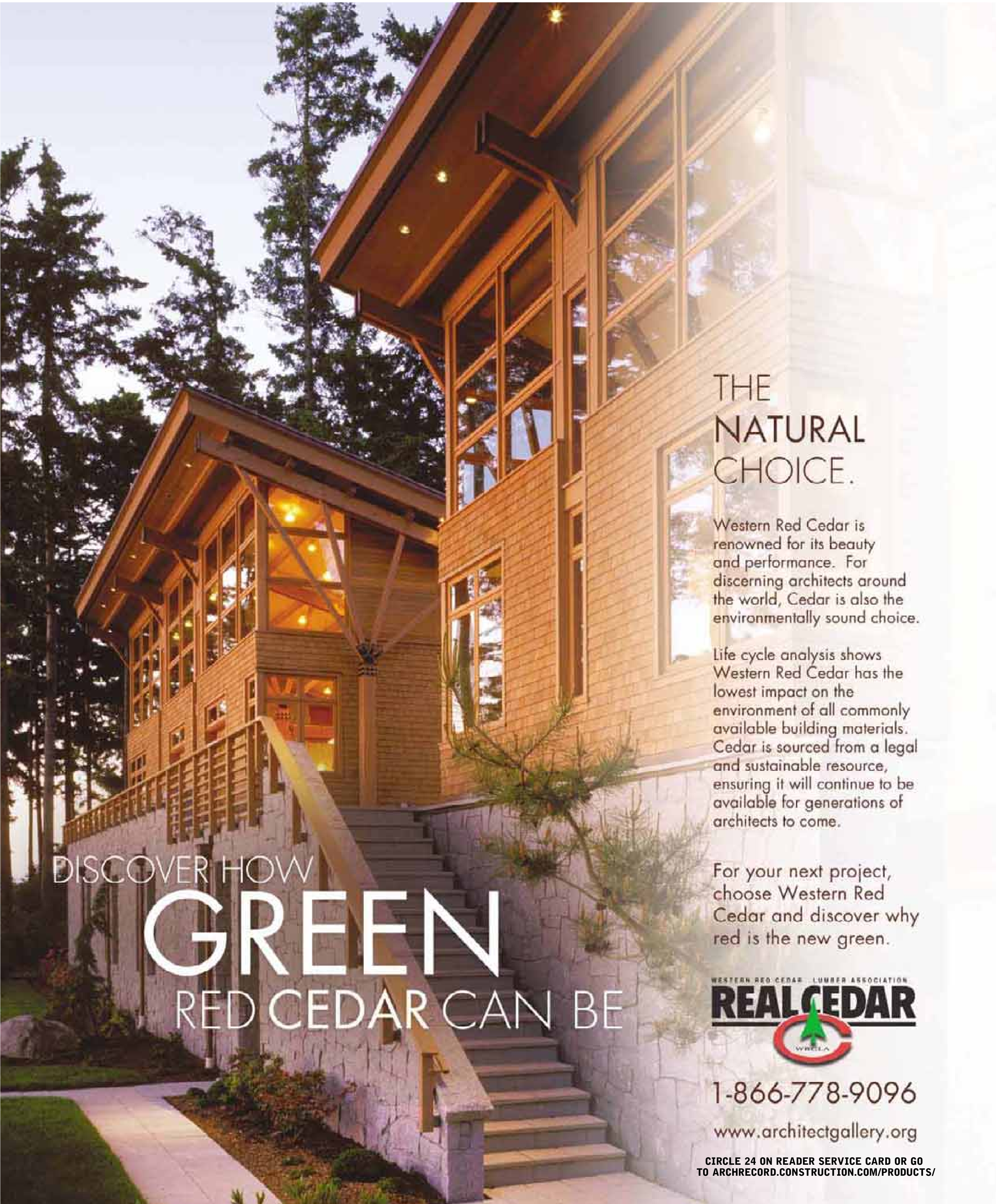

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New Orleans does not look as bad as you think—it's worse

Correspondent's File

Story and pictures by Sam Lubell

New Orleans
November 10–12, 2005

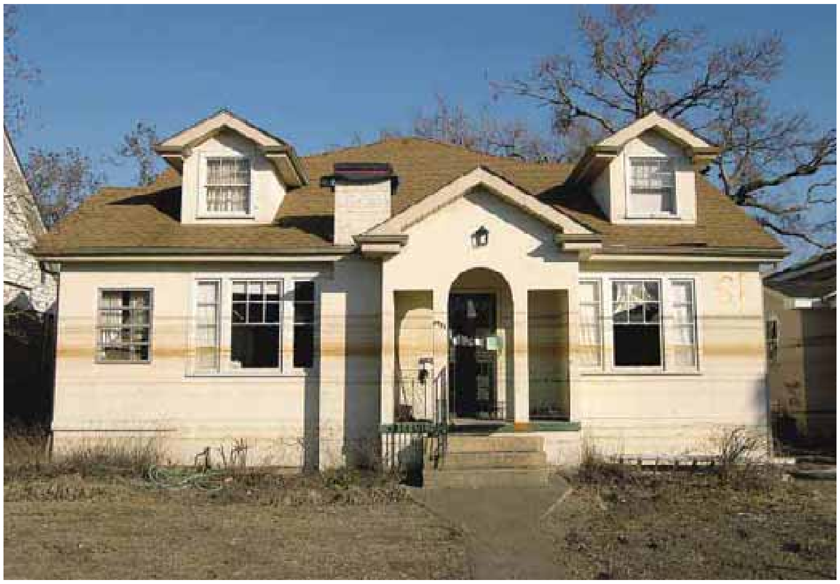
I'm in New Orleans for the Louisiana Recovery and Rebuilding Conference, a gathering organized by the AIA, the American Planning Association, and other organizations to discuss the state's development in the aftermath of Hurricanes Katrina and Rita. More than 650 participants share their perspective on topics such as building new levees, developing mixed-income communities, and saving historic properties. The discussion, which takes place at the Marriott on Canal Street, in the Central Business District, is good, but after a few hours, I decide it's time to get out and see what we're talking about.

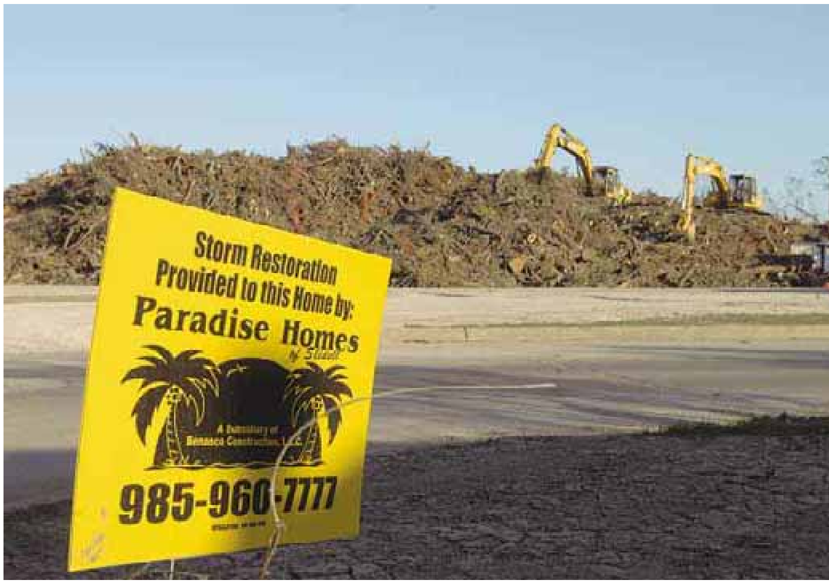
The scene outside couldn't be more different than the grand ballrooms and seasoned lecturers at the conference. Throughout the city, there is an empty, crippling stillness. Much of the place in mid-November, almost three months after Hurricane Katrina, still feels frozen in time, like Pompeii. Tree limbs still litter the sidewalks as if the storm had just occurred. Some homes are decimated, but most are still standing and look fine from the outside, except for some broken windows. But inside, they're a wreck; possessions are completely gone or are scattered like junk.

The best measure one gets of a home's fate is the height of the orange-tinted waterline on its facade. The line sometimes reaches below the windows, and in other cases sits below the eaves. The longer the water sat at that level, the darker the streak is. Sometimes, I can see the line easing upward, like marks parents make on a wall to track their child's growth. Whether many homes will be saved has not been determined, so the buildings sit in an uneasy limbo. And while they stand, they're lifeless without occupants. There is virtually no one in two thirds of New Orleans. I realize I'm a tourist looking at what was once a great city.

The only activity is the work of those clearing junk from houses. Trucks and forklifts are hauling mattresses, family albums, lamps, trees, and whatever else into gargantuan piles. Along Canal Boulevard, which has become a giant garbage dump, piles reach up to 30 feet high, with front-loaders working on top. Inside, homes are either gutted—owners got to them before the mold took its destructive toll—or smell like an old bathroom. Most homes are marked with yellow and red *X*s and numbers, signifying, I've been told, either that the house must be demolished, or that its fate is in question, or that it is salvageable. In some cases, the marks remain from just after the storms, signaling that the residence has been checked for bodies.

Driving east on St. Claude Avenue in the Lower 9th Ward, one first has the illusion that things aren't so bad. But inside any house or business, the sense of destruction is overwhelming. At an old burger joint, the flies and the intense, unbearable





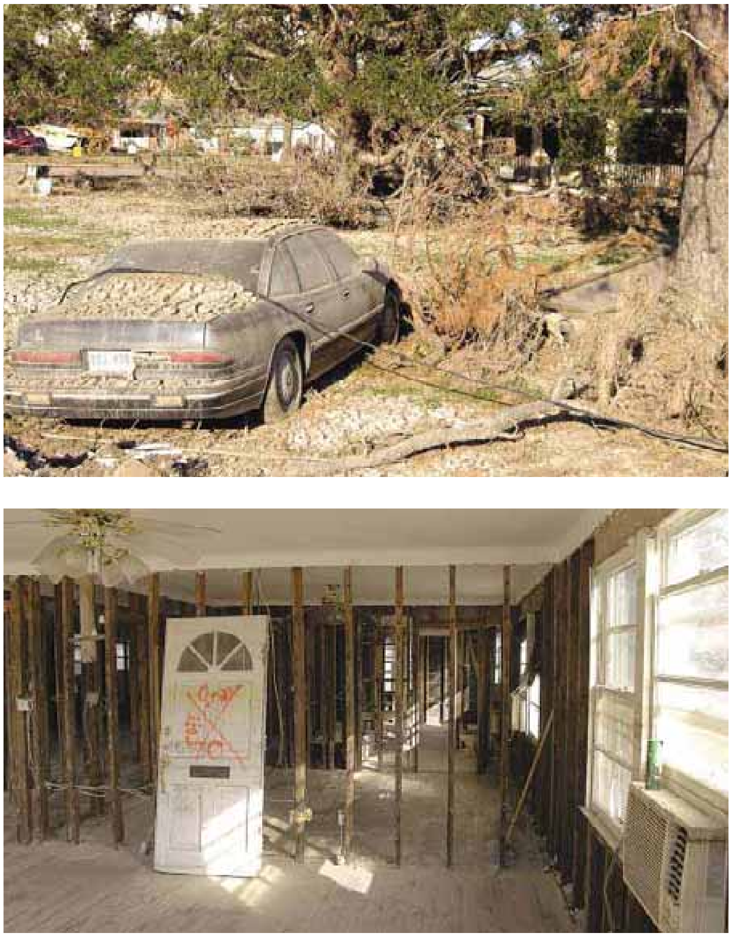
Orange waterlines are sometimes the only clue to the devastation inside homes and buildings. Canal Boulevard, near City Park, has been turned into a giant trash dump.

smell of rotting food dominate. Many of these buildings will be knocked down. Poorer owners don't have flood insurance and could never afford to renovate their homes. The fate of those owned by wealthier landlords is also in doubt. It seems unlikely that some of these neighborhoods can be saved. I can't help thinking what this destruction would mean. Just as an empty home is lifeless, this city without its architecture would be soulless, heartless, without an identity.

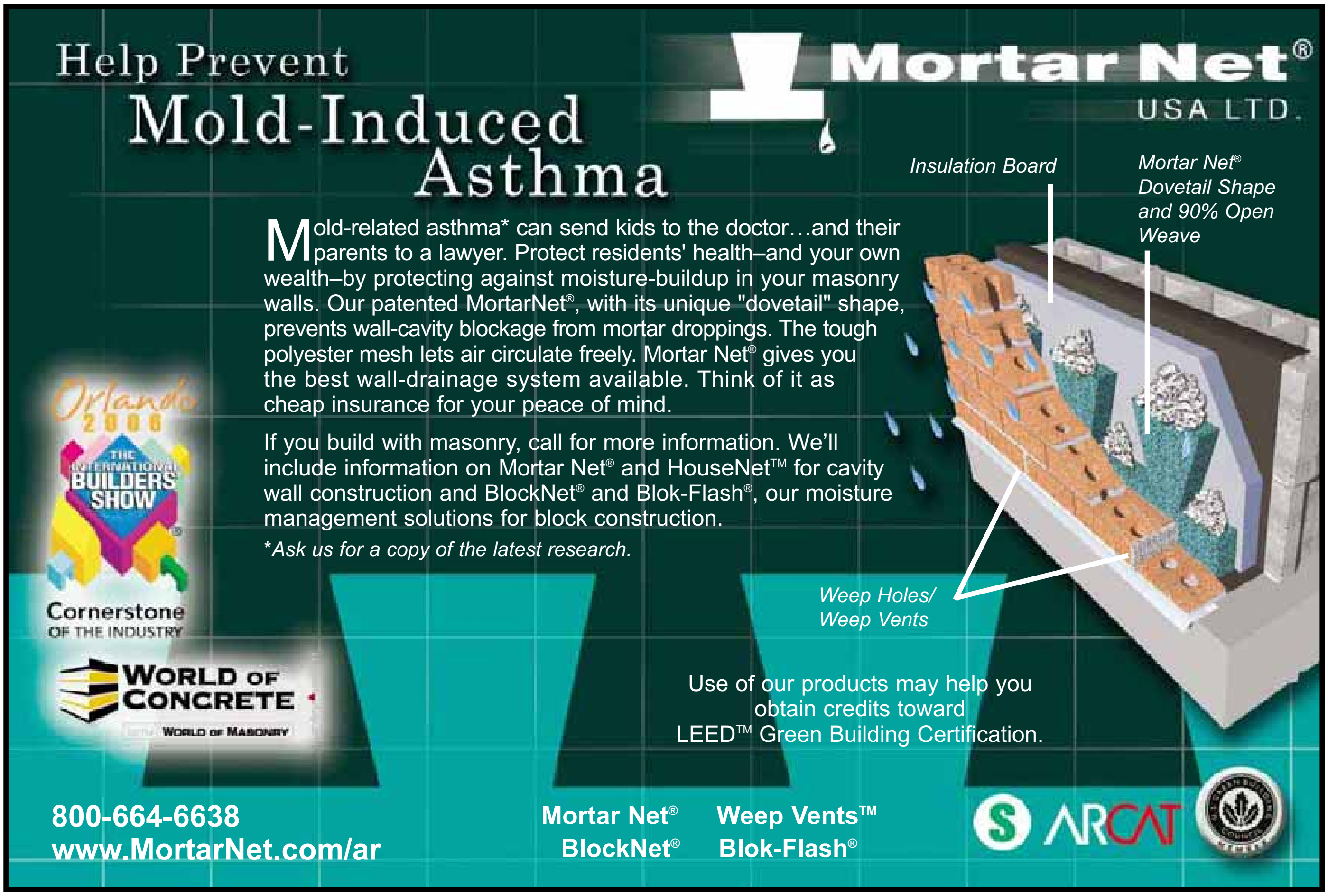
There are so many beautiful shotgun homes here, covered with bright yellows, purples, greens—raised cottages with intricate wood and masonry work. Gorgeous Victorian mansions are marked with the same yellow and red *X*s, the same orange waterlines. Early reports had said that only the poor were affected, but these sad markers also show up in wealthy Lakeview, near Lake Pontchartrain, in Mid-City, and in Gentilly.

Near the 17th Street Canal, in the city's northwest, the devastation caused by the hurricane is more obvious. A real storm came here! More garbage, scattered in every direction; imploded homes; cars somehow thrown through front doorways. City Park is brown, not its usual green. Trees with roots the size of people have been ripped from the ground.

Driving on Canal Street that night, I see that electricity has returned, but National Guard Humvees and police cars line most intersections for safety. Areas just outside here are pitch dark, and 8:30 at night might as well be 2:30 in the morning. I lose track of where I am while driving with a friend west toward Rock N' Bowl, a newly reopened nightspot in Mid-City. People at the bowling alley, where the few working lights, run via generator, tend to flicker, tell me to pray for them.



Views near the 19th Street Canal, in the city's northwest, resemble a bomb's aftermath (top). Elsewhere, a home is being gutted and repaired (bottom).



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They're resilient people. Only the ones that really want to be here will stay. This will be a smaller city in the future.

The French Quarter, mostly spared, is quiet the next day. Only a few tourists walk the empty streets, passing migrant laborers looking for work rebuilding or cleaning up. Bourbon Street looks like a stage set. On Canal, most stores are still boarded up. Some are difficult to discern from the rubbish piles outside them. City Hall, a clunky Modern building, is also covered with plywood. On Wisner Boulevard in Midtown, the scent of rot and mold is everywhere.

And it goes on, mile after mile after mile. After a while, it becomes numbing. I want to close my eyes. It's difficult to return to the conference. Attendees there discuss zoning, land use, and aesthetic integrity, but I have trouble imagining how leaders will be able to clean up all the trash, let alone rebuild this place. A few people are beginning to rebuild their homes, but these structures will be lonely islands in a sea of destruction. Surely, their owners won't feel safe from crime, or from another hurricane.

Safety, and new development, will only come through levees strong enough to withstand a category five storm. Nobody will build, lend, insure, or do anything without these. The levees near lake Pontchartrain, the huge earthen mounds, are fine, but those nearer the worst-hit neighborhoods are barely patched up with sandbags. Experts hope the levees will be returned to pre-Katrina levels by June. But that won't be enough. The price tag for proper levees has been quoted at around $30 billion. Yet, there is no clear sign that Congress has any intention of paying this bill. The rebuilding could cost up to $200 billion, the experts are saying. It could be another 25 to 50 years before this place gets back to normal.

A symbol of hope or of devastation?

The smart, idealistic notions being passed around at the Marriott, familiar to those who have attended past AIA or APA conferences, seem removed from reality. They mean nothing if leadership doesn't find a way to work together, and if money doesn't arrive. Louisiana Senator Mary Landrieu says the federal government keeps most of Louisiana's annual offshore oil and gas revenues. The state should be able to hold on to more for rebuilding (but not for unnecessary pet projects). New Orleans Mayor Ray Nagin didn't show up for this conference, and the city held its own meeting with the Urban Land Institute a couple of days later. There is no leader here. Meanwhile, specific questions that no one wants to answer must be answered very soon. The fate of historic buildings must be decided now or even fewer will be salvageable. Homes will need to be condemned to make way for bigger levees and improved wetlands. If homes can't be built on low ground, they must be cleared to make way for new development. The life has to return to the city, and it could take a miracle to do it. But for now, that life is gone, and New Orleans remains still. ■

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Worlds apart: Architects and the public talk past each other

Critique

By Robert Campbell, FAIA

"What can we do?" asks a member of the university's Board of Visitors. "The students and alumni hate all the buildings the architecture professors like, and the architecture professors hate all the buildings the students and alumni like."

You can't put the case more clearly than that.

The school in question is the University of Virginia. Recent buildings there, both those completed and those proposed, are often designed in imitation of the manner of Thomas Jefferson, who of course did the original campus.

That situation prompted a protest in September. Thirty-four faculty members, most from the School of Architecture plus a few others, signed a letter to the Board of Visitors and the rest of the university community.

It's worth reading. Some excerpts:

"The University is heir to Jefferson's progressive vision of education, created to accommodate the challenge of a new democracy and to address the unique American landscape.

"Why has this legacy of innovation in service of ideas been allowed to degenerate into a rigid set of stylistic prescriptions?"

The letter goes on with a series of questions:

"Is there not a difference between buildings that merely look Jeffersonian as opposed to the infinitely more difficult task of being Jeffersonian?

"Is UVA to become a theme park of nostalgia at the service of the university's branding?"

Branding, of course, is a buzzword of the moment. When they say "branding," the writers are alleging that UVA is selling itself like cereal by promoting image rather than substance.

I have good friends among the faculty at Virginia, and I once served as a member of the school's advisory council. But I think the faculty letter is for the most part silly. Too much of it is a pastiche of verbal clichés. They're at least as unoriginal and annoying as the pastiche of architectural clichés they're complaining about.

18th-century branding

There's one big problem with the faculty's thesis. Thomas Jefferson—along with his too-often-unsung collaborator, Benjamin Latrobe—was branding all over the place.

Jefferson grabbed brands from Greek and Roman porticoes, from Palladio, from Georgian England, from the Pantheon. Why did he do this? Because he wanted to speak an architectural language that the public could understand. And a language, almost by definition, is a collection of agreed-upon conventions. It is understandable only when it stays in touch with tradition. If a language changes too fast, if it's too revolutionary and inventive, it becomes incomprehensible, at least without special study. That's why nobody speaks Esperanto.

What was Jefferson saying with his brands? The message is pretty obvious. He was using his imagery to announce that his university was a civic and public presence, neither domestic nor utilitarian, and that it would (among other things) respect and promulgate the wisdom of the past. Could he have said that as well in some newly invented manner? No.

Jefferson knew, too, that you can make your points by violating convention, if there's a convention to violate. This child of the Enlightenment provided his university with no chapel, installing a library as the focus instead. He left his campus, at one end, open to the horizon, suggesting that it—like America—was only a beginning. He linked his formal campus to the farmland and wilderness beyond with a system of gardens. He built with simple vernacular materials, wood and brick, the materials of a pioneer, rather than the stone used for public buildings in Europe. In all these ways, he was a remarkable architect. But that doesn't mean he wasn't branding. Of course he was. Like mad.

Karen Van Lengen, the dean of the school, tells me over the phone that the purpose of the letter was not to dictate any style, but rather to begin a conversation between the architecture school and the rest of the university. She's right, of course, in believing that such a conversation doesn't happen on most campuses. And the letter certainly

With his design for the University of Virginia, Jefferson took brands from the Classical canon because he wanted an architecture people would understand.

Contributing editor Robert Campbell is the Pulitzer Prize–winning architecture critic of The Boston Globe.

PHOTOGRAPHY: © DAVID SAILORS/CORBIS

did get people thinking. If you've got a few spare hours, check out the debate at www.uva-architecture-forum.org/openletter.html.

I come back, though, to that anonymous member of the Board of Visitors. What, exactly, can he or she do?

Tear it down! Tear it down!

As I write, TV station Channel 4 in London is about to air its long-awaited series entitled *Demolition*. Early in the year, the station asked its viewers to nominate the worst building in Britain. More than 10,000 people nominated more than 1,000 buildings. When the four shows run, in late December, a panel of experts will look at the buildings that made the short list, and will argue with one another about which should be chosen for demolition.

Demolition was originally supposed to air on a date that would coincide with the announcement of the James Stirling Prize, which is given to the best British building of the year. No doubt, the joyous hope of the show's promoters was that the same building would win both the Stirling and the demolition vote, thus proving that architects and the public, like the alumni and professors at UVA, live on separate planets. As it turned out, however, the Stirling was awarded in October to the new Scottish Parliament complex by Barcelona architects Enric Miralles and Benedetta Tagliabue. The winner on *Demolition* has yet to be named. Rumor says that the Parliament is among the contenders, but it's only rumor.

Demolition is the idea of George Ferguson, current president of the Royal Institute of British Architects (RIBA). Ferguson argues that along with preservation laws to protect good buildings, there should be an "X list" of buildings that ought to be torn down. Listen to the RIBA's Web site:

"The proposed X-list will identify the worst buildings in Britain. They will be buildings and structures that are judged by popular and expert opinion to be beyond redemption. X-listing will give planners powers to refuse change of use and to grant beneficial permissions for replacement. It is also proposed that there is a grant fund, vested in English Heritage, to help tip the balance in favor of demolition and appropriate replacement in particularly deserving cases."

Ferguson, of course, was assuming that only buildings disliked by the architectural community would be demolished. But as we've noted, opinions can differ. Take the Tricorn Center in Portsmouth, a parking garage-cum-shopping center. In an unrelated vote in 2001, it was chosen Britain's ugliest building by the general public and was promptly approved for demolition. (I don't know if this has occurred yet.) But according to a press report at the time, the Tricorn, completed in 1964, "enjoys cult status among architecture students as a classic of the 'new brutalism' style." A replay of Virginia?

THE JOYOUS HOPE OF THE SHOW'S PROMOTERS WAS THAT THE SAME BUILDING WOULD WIN BOTH THE STIRLING PRIZE AND THE DEMOLITION VOTE.

Design as a contact sport

The British talk about architecture less politely than Americans do, just as they watch their soccer games less politely. Prince Charles described the Tricorn as "a mildewed lump of elephant droppings." You don't have to admire the Prince to admit that he was undoubtedly stating a majority view, although not the view of architecture students. One wonders if he's read the nominations for *Demolition*, one of which proposes to blow up Buckingham Palace because it's too old and dowdy "for Queen Camilla."

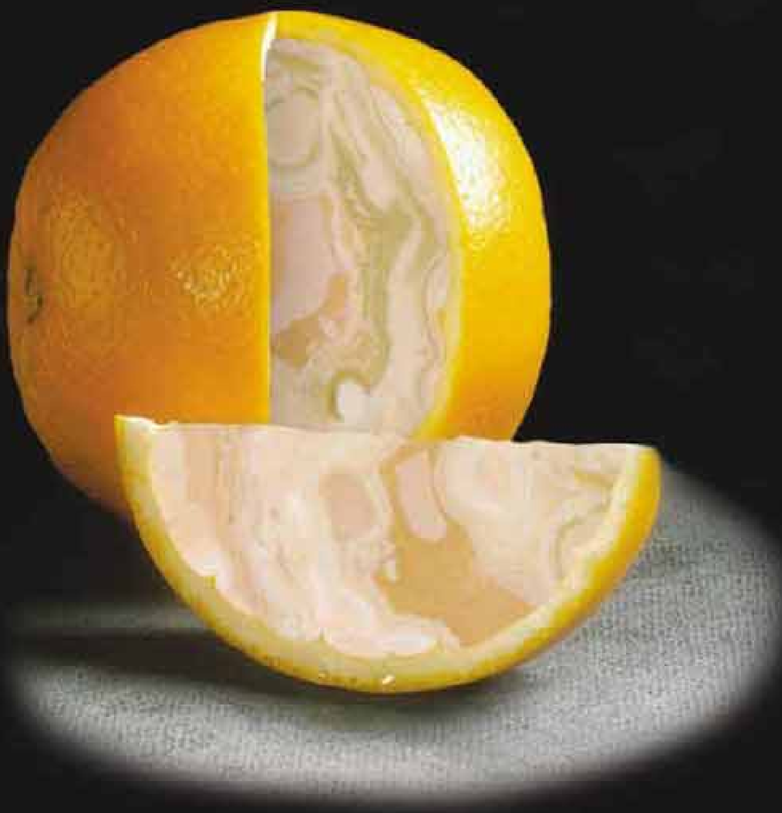
The architect of the Tricorn is Owen Luder. Luder is a former president of the Royal Institute of British Architects, the position George Ferguson holds today. (Are these ironies getting out of hand?) If you've got an ear for architectural cliché, Luder is music. He says his creation "pushed back the frontiers" of style. (I guess he means "extended the frontiers.") It was "an architectural statement about the early 1960s." It was "a 'gee whiz' building, not a 'so what' building."

Some argue that it's unfair to let the public make judgments like those of the *Demolition* shows, because public taste is fickle. Fickle it may be, but the taste of the architectural community is more fickle. How long did it take our leaders to get through PoMo, Deconstruction, Blob, Excavation, Fractals, Modern Revival, and several more? Now the talk is of Green and Iconic.

Two places, Virginia and Britain. Both are reasonably civilized. In both, there's a frightening gap between the taste of an architectural elite and that of the larger public. The good news is that everyone is arguing about architecture. The bad news is that we'd make a pretty good subject for a Monte Python sketch. ■

Love it or hate it, the Scottish Parliament in Edinburgh by Miralles and Tagliabue has become one of the most talked-about buildings in Europe.

PHOTOGRAPHY: © DUCCIO MALAGAMBA



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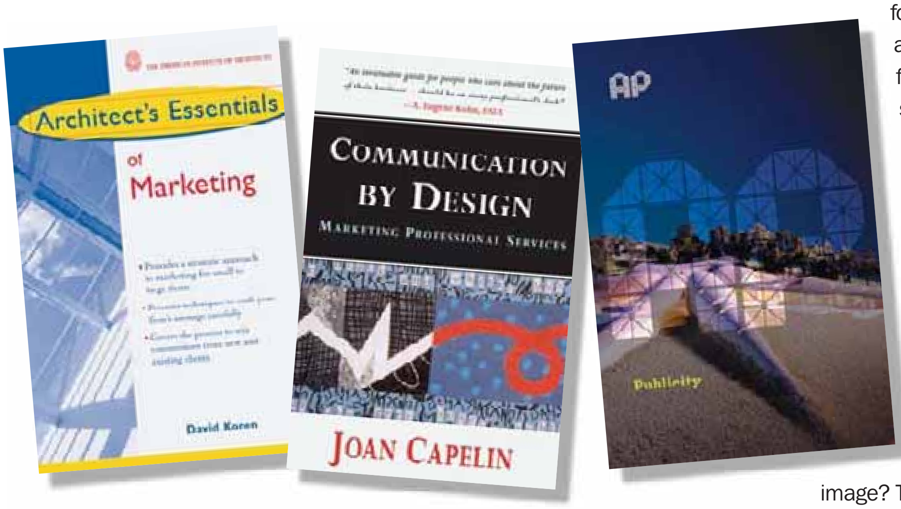
Marketing tips and titles on museums, photography, and cities

Books

Architect's Essentials of Marketing, *by David Koren. New York: John Wiley, 2004, 288 pages, $34.53.*

Communication by Design: Marketing Professional Services, *by Joan Capelin. Atlanta: Greenway Communications, 180 pages, $34.95*

Is It All About Image?: How PR Works in Architecture (Architecture in Practice), *by Laura Iloniemi. New York: Wiley-Academy, 2004, 224 pages, $55.*


Architect's Essentials of Marketing
David Koren
Communication by Design
Marketing Professional Services
Joan Capelin
AP
Publicity

Architects can't be players in today's competitive climate unless they can market their services successfully. These three books define terms and suggest efficient applications of marketing methods.

In *Architect's Essentials of Marketing,* David Koren, the marketing director for Gensler in New York, provides a quick, comprehensive tutorial for setting up a firm's marketing strategy. His straightforward book demystifies the profession's lingo and walks the reader through the major tasks of developing a marketing strategy: creating a mission statement, vision statement, and action plan; defining the firm's identity and position in the market; and allotting and managing a marketing budget.

Koren stresses the importance of gaining clients' trust and notes that their choice of architect often depends on intangible qualities such as individual chemistry, personality, and passion. He emphasizes the need for architects to be proactive and know their clients' needs. The key, he says, is to make marketing a regular part of the firm's work, continuously evaluating what strategies work for getting new business and publicity, and which methods need tweaking. Boldly labeled sections make the book easy to navigate; charts, graphs, and a bibliography and index add helpful information.

Joan Capelin's useful book *Communication by Design* is a quick read offering kernels of wisdom in conversational prose. Capelin, a long-time public-relations executive, organizes her book into 29 short, catchy principles, peppering her narrative with anecdotes and quotes from architects. The tone of her book resembles that of a wise aunt freely sharing her advice: Be proactive and maintain good communications among all those involved in a project; anticipate possible glitches and ask questions ahead of time; be straightforward about mistakes and correct them; always follow up; and celebrate small achievements. Capelin offers exercises for implementing her principles, and also provides tips for fine-tuning presentation skills. This small, easy-to-carry book makes a good motivational read on the way to a conference or meeting.

Is it all about image? That's the question Laura Iloniemi asks at the start of her richly illustrated book of that title. Unfortunately, she never answers it, instead asking the reader to wade through a dense thicket of information while offering little advice and few opinions (perhaps her training in architectural philosophy compels her to let evidence speak for itself).

Her initial question is followed by a series of firm profiles, project case studies, interviews with architectural writers, notes on architectural photography and presentation, and a few lists—none of which directly address marketing per se. There is, furthermore, no connecting thread between case studies and the book's collages of bright images, some of which are not mentioned in the text. Only in the 20-page section on architectural photography do the images clearly illustrate the narrative. After a weak conclusion, the author finally offers a few useful guidelines for hiring communications specialists, followed by some general tips, a bibliography of resources, and a directory of photo agencies. *Larissa Babij*

New Museums: Contemporary Museum Architecture Around the World*, by Mimi Zeiger. New York: Universe Publishing, 2005, 208 pages, $29.95.*

No building type is so invested with potential as today's museums, expected to function as memorials, menders of urban decay, creators of new civic images, and even socio-political statements (witness the French government's recent decision to enlarge the Louvre's Islamic department). Mimi Zeiger's compendium of recent projects goes beyond previous publications in its range of museum types and its geographical scope, with nearly global coverage comprising examples from the U.S., Europe, China, and Japan. Included are museums of art, science, natural history, papermaking, stonework, volcanoes, and archaeological sites.

The book loosely divides museums into three categories. The first,

NEW MuSEUMS

"Civic Pavilion," includes institutions like the Contemporary Art Museum in St. Louis by Allied Works Architecture, which enlivens its urban context. The second, "Regional Response," refers to museums such as Takaharu + Yui Tezuka Architects' Echigo-Matsunoyama Museum of Natural Science in Matsunoyama, Japan, which relates to a pastoral setting. Zeiger presents Dia:Beacon, renovated by artist Robert Irwin in collaboration with Open Office, as an example of a third type, "Objet d'Art," museums that create a spatial synthesis between art and architecture.

A single page of text, written in an informal, no-nonsense style, accompanies several pages of photographs for each museum. These thumbnail sketches are reliably accurate and at times even evocative. Zeiger provides the cultural context for each project, such as the regionalism of Chinese architect Jiakun Liu measured against a backdrop of high-profile international practitioners.

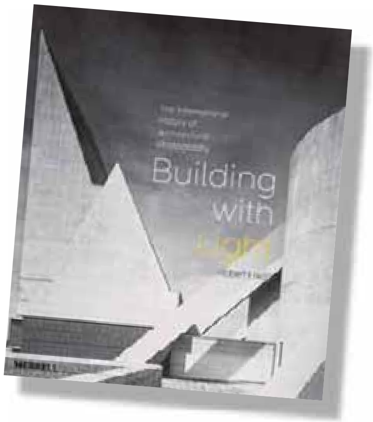
Missing in most cases, however, are comparable relationships between the featured museum and other work by the same architect. More important is the absence of plan drawings. And while exteriors are beautifully illustrated, interiors are often short-changed, with views of circulation areas outnumbering those of exhibition spaces.

The extraordinary proliferation of museums in the last several years makes it hard to keep abreast of the topic. Already Zeiger's book seems slightly out-of-date: By now, Steven Holl's Bellevue Arts Museum has been renovated by a different architect in accordance with a new mission. Also, one wonders why SANAA's recently completed 21st Century Museum of Contemporary Art in Kanazawa, Japan (2004), was not included in addition to the firm's O-Museum in Nagano (1999).

New Museums does not attempt meaningful architectural analyses. Rather, like *Museum Builders* (1994), edited by James Steele, and others in a similar vein, the emphasis is on illustrations. Its smaller format, however, makes this book the most practical.
Victoria Newhouse

Building with Light: The International History of Architectural Photography, *by Robert Elwall. London: Merrell, 2004, 240 pages. $59.95.*

In his book chronicling the history of architectural photography, Robert Elwall features one of the most influential pictures ever taken of any building—a black-and-white photo of Mies's Seagram Building, taken by Ezra Stoller in 1958. This portrait remains our primary image of that classic statement of steel-and-glass construction. It was taken from a vantage point unavailable to the general public, and has about as much poetry as a mug shot.



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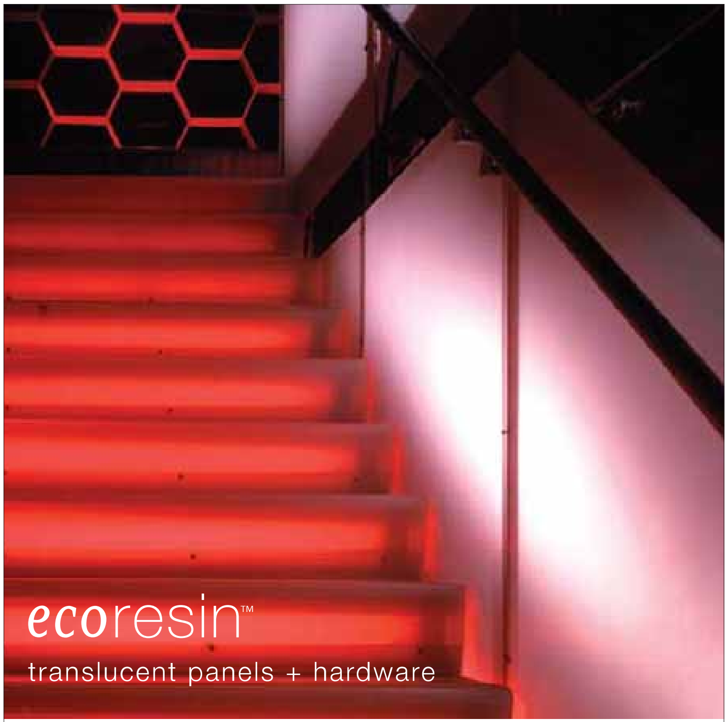

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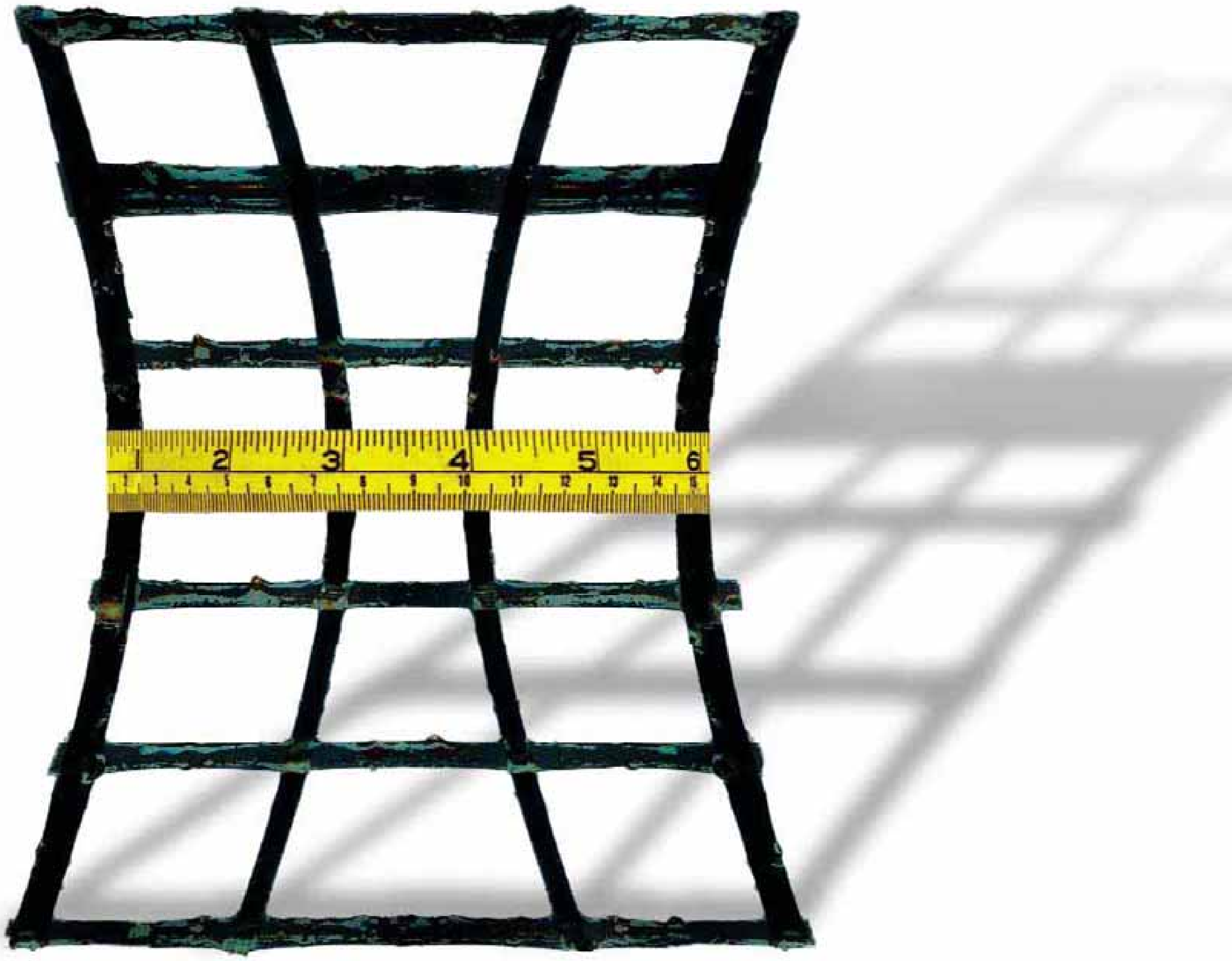

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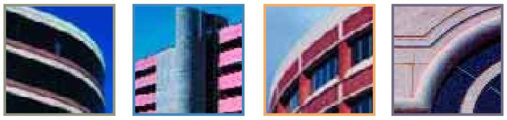

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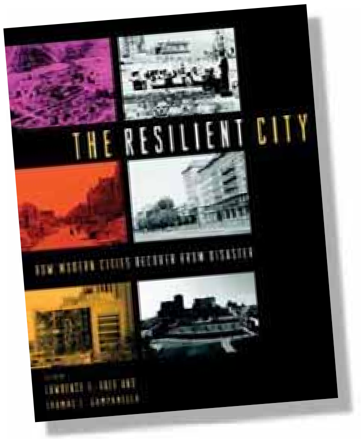
Likewise, Stoller's overly corrected portraits of Wright's Johnson Wax buildings come off as cold and off-putting. Such photography did the architectural profession no favors; Stoller's images did as much to bring on the demise of Modernism as any Robert Venturi polemic.

Building with Light is a welcome reminder of photography's symbiotic yet tension-filled relationship with buildings. Elwall has provided a solid chronological survey of the topic. There are predictable chestnuts, such as Frederick Evans's cathedral views and Julius Shulman's California houses of the 1950s.

Is architectural photography merely documentary (we know the Larkin building only through pictures), or is it art? Photography may have diminished our architectural expectations through "desensitizing repetition of the same views," says Elwall. The most visually rewarding pictures here are those in which art trumps documentary.

The book's best images date from the 19th century. Schinkel's Schauspielhaus is supremely rendered by a spare 1856 albumen print, while few painters of ruins captured the romance of the Erechtheum better than William Stillman, American consul to Crete. Robert MacPherson's photographs of Roman antiquities "sacrificed architectural details and the principles of perspective" to capture the magnificence of the past.
William Morgan

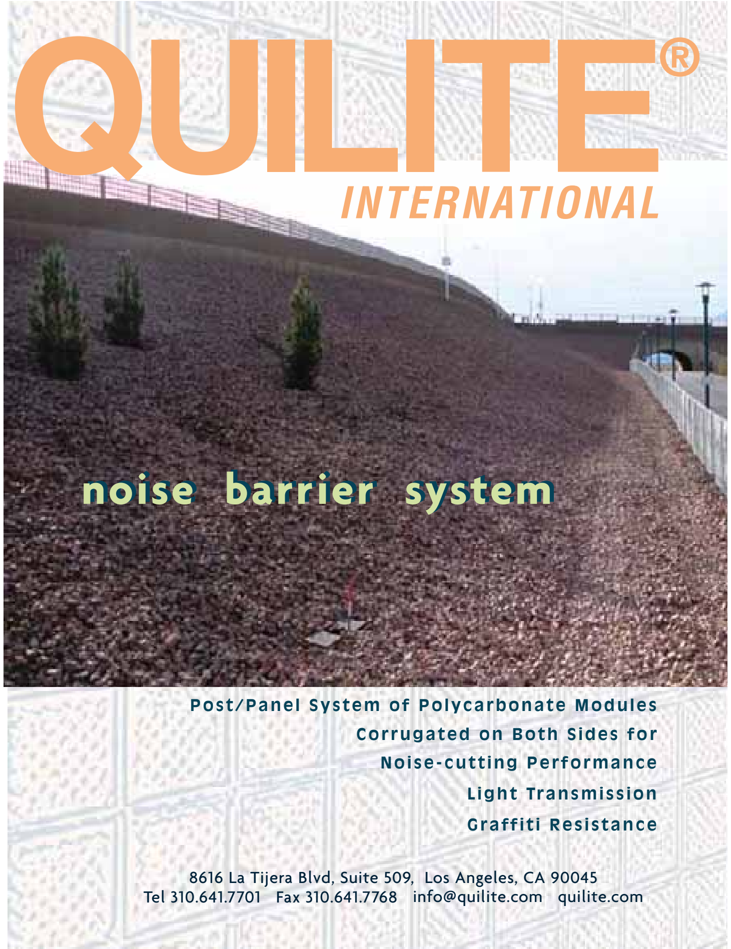
The Resilient City: How Modern Cities Recover from Disaster, *edited by Lawrence J. Vale and Thomas J. Campanella. New York: Oxford University Press, 2005, 376 pages, $24.95.*



The Resilient City comes as natural disasters seem to be gaining in ferocity and frequency and fear of terrorism has added a new level of anxiety to urban life. The book surveys a wide field of case studies of urban rebuilding, ranging from the overly familiar (New York after 9/11) to the virtually unknown (the devastating and partially concealed 1976 earthquake in Tangshan, China).

Essays by 14 academic experts take differing approaches in assessing responses to disasters. The first section addresses the narratives that emerged following destruction by terrorists in Oklahoma City in 1995 and New York in 2001. The book then moves on to historic examples, examining the symbolic dimension of the reconstruction of Washington, D.C., after the British sacked the city in 1814; the complex, ideologically competitive rebuilding of the two halves of postwar Berlin; the Soviet-influenced rebuilding of Warsaw; the case of Guernica, Spain, the Basque village destroyed by Axis bombing in 1937; and the many disasters that have befallen Jerusalem's monuments since A.D. 70. A final section focuses on the politics of reconstruction in modern-day Tokyo, Tangshan, Mexico City, Beirut, and Los Angeles, with a further contribution on the effects of digital technologies on urban reconstruction.

It is difficult to make broad generalizations from this immense stock of information, but to their credit, the editors set out twelve "axioms of resilience." These emphasize the



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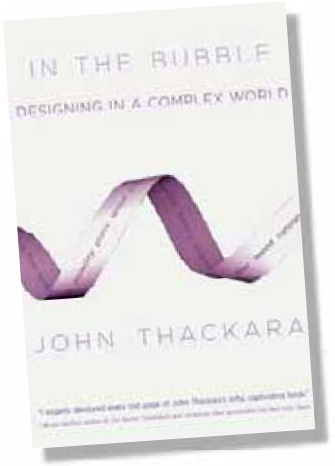
necessity of “narratives of resilience for successful reconstruction efforts”—that is, officially supported accounts of how the disaster occurred and how it is being overcome. The authors add, however, that such narratives are always contested. Successful urban resilience, they insist, is linked to larger national efforts and is always made possible by political and financial contributions from beyond the immediate area of the crisis. The authors believe rebuilding is driven by remembrance, and they are fascinated by “power of place” in allowing urban residents to overcome disasters. They conclude by insisting that resilience encompasses more than rebuilding, pointing to Guernica’s unhealed wounds despite rapid physical rebuilding.

The case of Guernica, well presented by Julie B. Kirschbaum and Desirée Sideroff, has particular resonance today, as the Nazi bombers targeted the most populated downtown civilian area to instill fear in a population for whom the town symbolized Basque democracy and autonomy. Although Francisco Franco oversaw the city’s reconstruction, it was Picasso’s famous painting *Guernica* that survivors saw as the real memorial of the event. The authors conclude that Guernica offers a particularly clear example of the need for long-term study of urban resilience within cultural, political, and emotional frameworks. It is, in fact, an approach used in many of the essays included in this thoughtful book. *Eric Mumford*

In the Bubble: Designing in a Complex World, *by John Thackara. Cambridge: The MIT Press, 2005, 321 pages, $32.95.*

John Thackara, whose previous books include *Design After Modernism,* is the director of “a design futures network based in Amsterdam and Bangalore.” His book’s title is a phrase used by air-traffic controllers to describe their state of mind when they feel fully in control—a feeling he believes we can achieve if “people are designed back into situations.” The book advocates such humanistic redesign. It is organized by themes of modern life, including “lightness,” “locality,” and “flow.” Within these themes, Thackara leaps nimbly from statistics to observations to anecdotes, from past to present to future, from energy to the environment, from the Burning Man Festival in Arizona to the Bombay Lunch Delivery program.



Many of his observations touch on architecture. A Prada store in Tokyo by Herzog & de Meuron “smelled like the last days of Rome.” The Roissy Terminal 1 at Paris’s Charles de Gaulle airport is a “disorienting” example of a “building that serves the system, not the system’s users.” And Rem Koolhaas’s Euro-Lille in France makes its users “feel like one of those tiny humanoid figures architects use to decorate their models: sleek, but blind.”

Thackara begins with the premise that “if we can design our way into difficulty [and he clearly thinks we have], we can design our way out.” His final words support connections and collaborations: “Whatever you choose to do, don’t try to do it alone. We are all designers now.” *Stanley Abercrombie*

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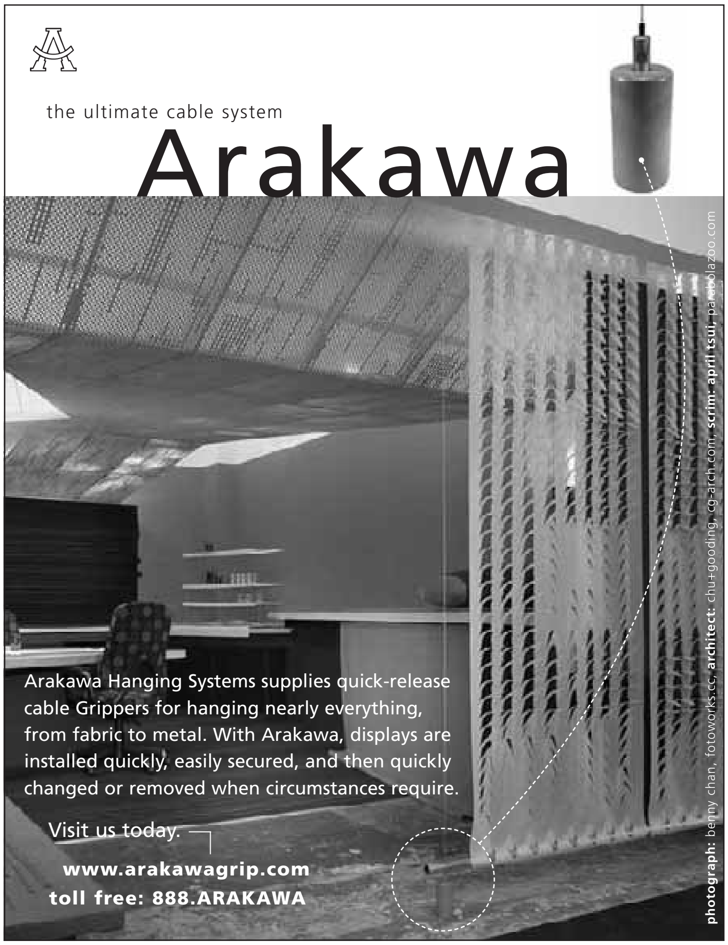

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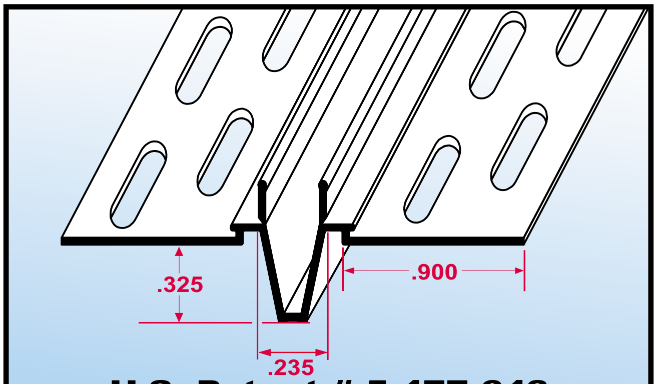

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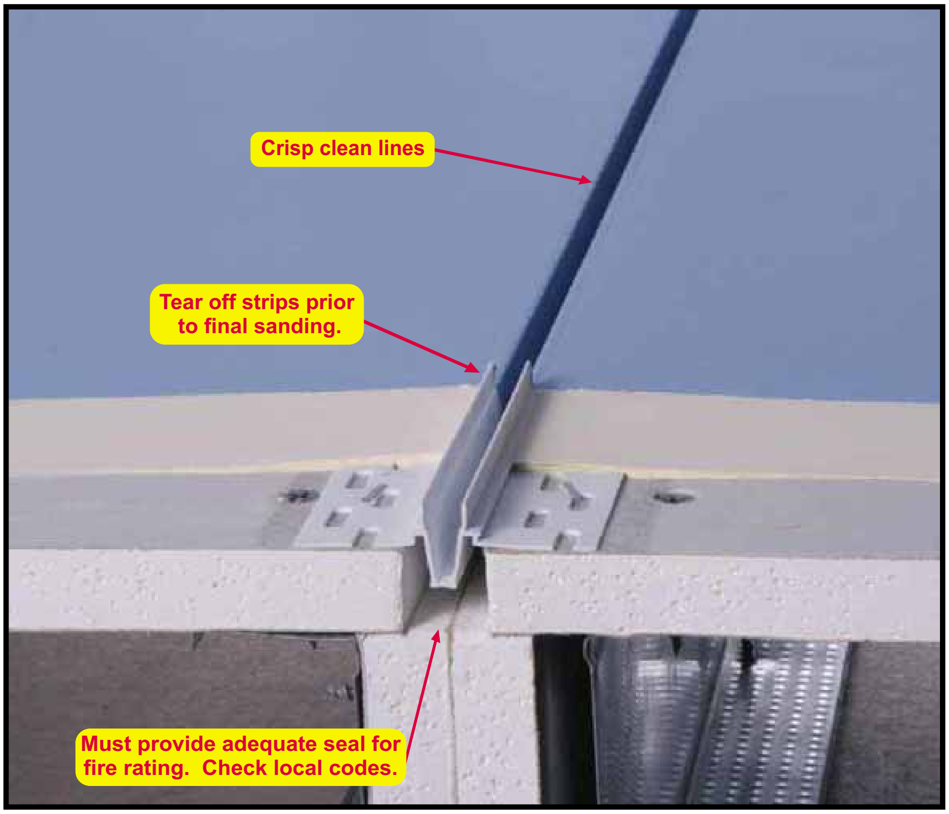
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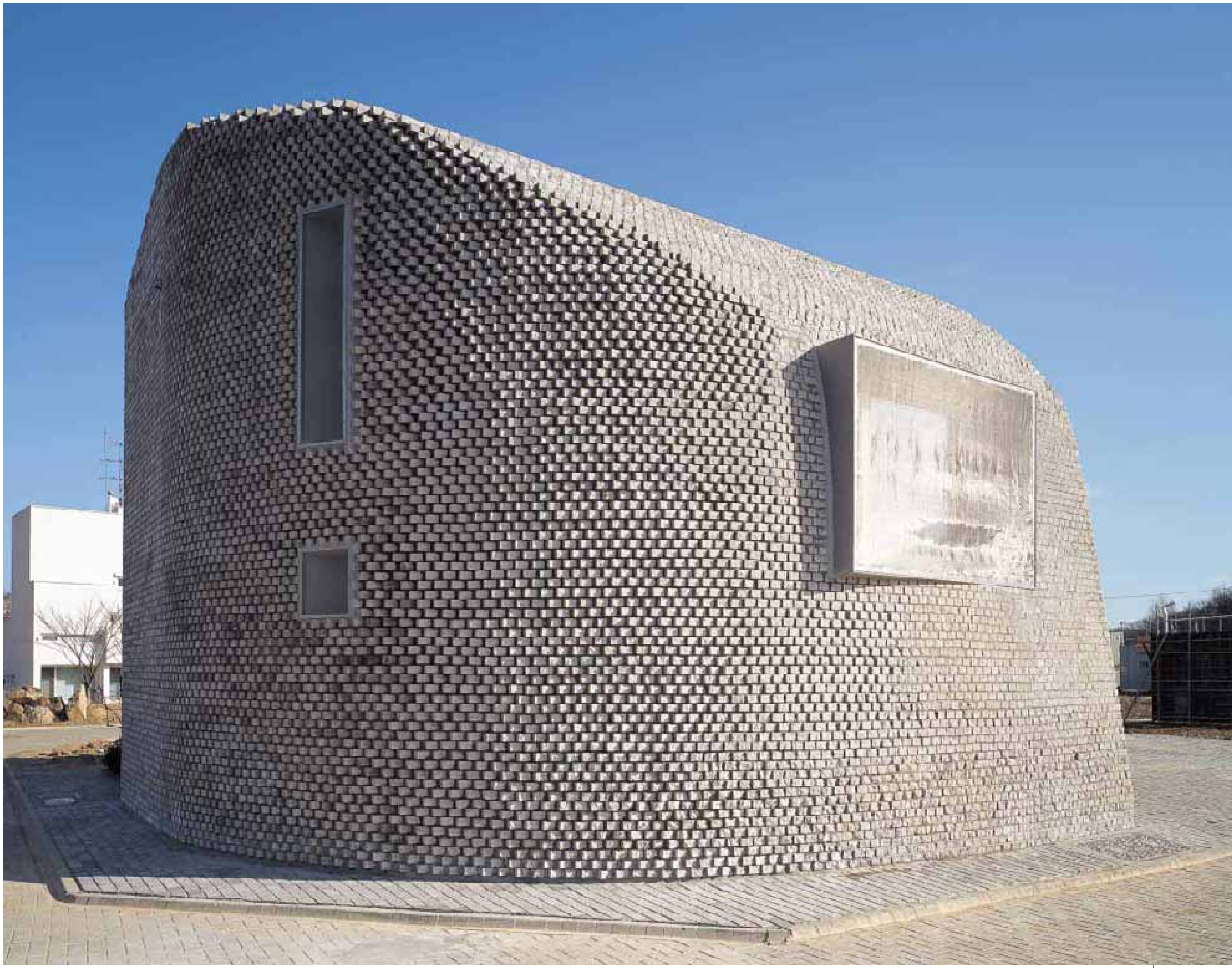


PHOTOGRAPHY: © KIM YONG KWAN

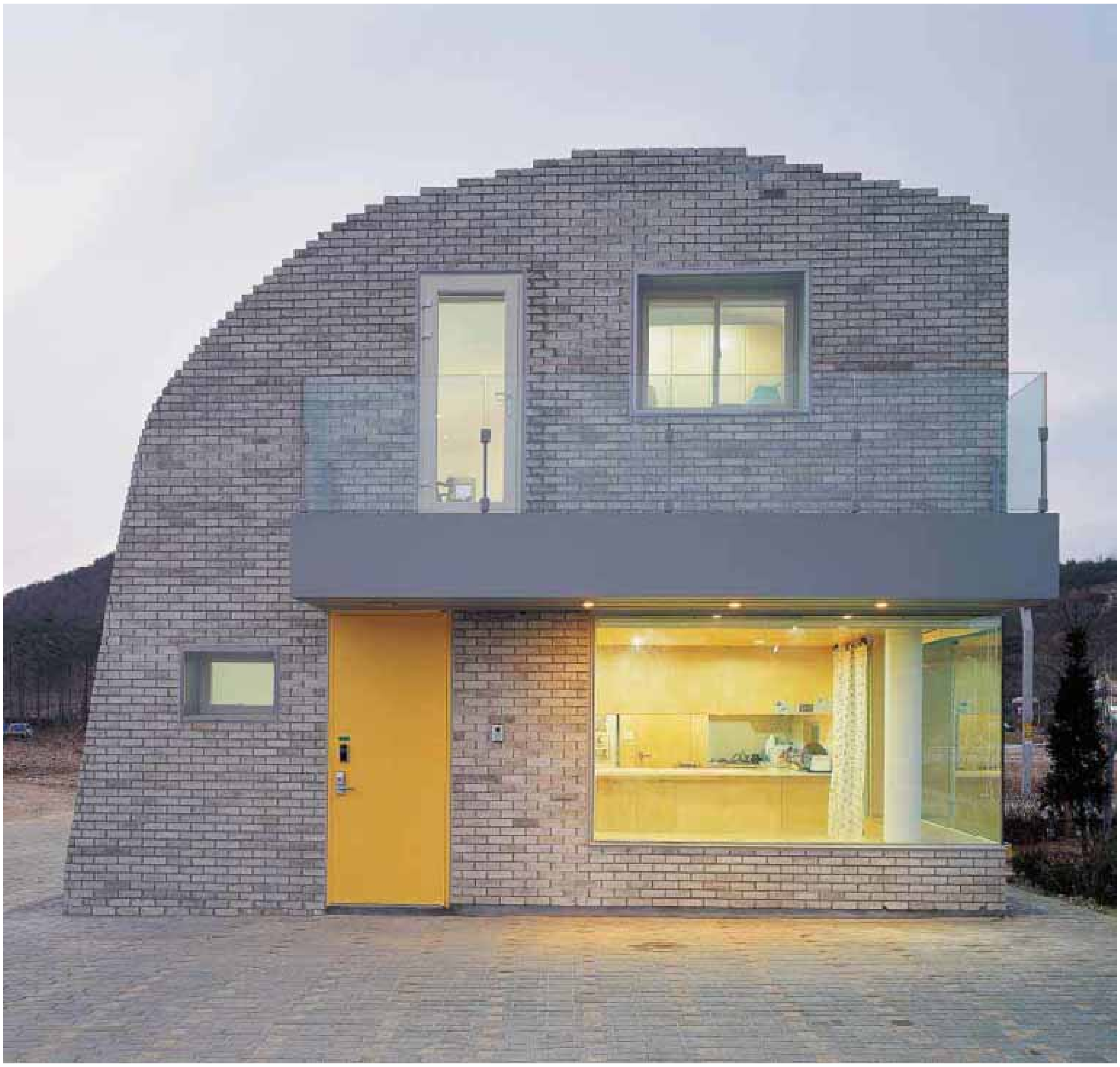
By Beth Broome

A little house rises like a swell on a brick sea

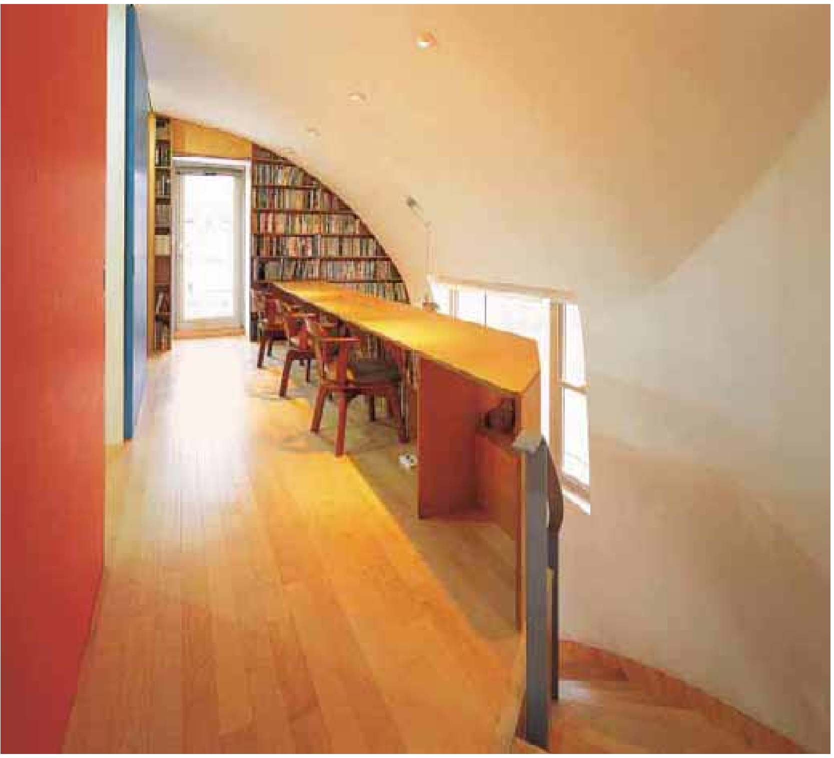
In a world that seems increasingly to value its privacy and the right to spread out, a striking home virtually straddles the divide between capitalism and communism, exemplifying an economy of means and a dedication to community.

Pixel House lies in the Heyri Art Valley, a planned artist community just south of the heavily fortified Demilitarized Zone that separates North from South Korea. Organized around five hills, the development is overseen by architectural coordinators Junsung Kim and Jongkyu Kim, who preselected a team of architects for the project. The team included James Slade and Minsuk Cho, who were later chosen by a young family seeking to build their home in the valley.

The clients, who had been active in the Socialist party, wanted a house that reflected their political background: a simple, compact building that, rather than functioning as a private sanctuary, would take into account greater societal needs. Consisting of three phases (to date, only one has been realized), the residence was



The diminutive Pixel House practices economy on a number of levels. The interiors of the 900-square-foot home consist of Sheetrock, maple plywood, and a lively palette for the walls.



designed to serve a secondary function as a children's day-care center while the family was gone during the day. Phases two and three involve separate buildings sited to form a courtyard open to the neighborhood—a move that activates the environment, inviting inclusions, rather than creating a barrier.

While the valley's master plan called for a continuous row of houses, Slade and Cho decided to set their home, which sits at the end of the row, apart from the resulting "wall." However, instead of placing an object on the field—and to avoid having the house appear simply as a fragment of the row—the architects integrated the building into the landscape. Using a sandy-colored concrete brick, Slade and Cho effectively wove the house into the fabric of the surrounding hardscape, creating the illusion of it rising out of the paved area. "Once we broke the rule of separating the house from the row," says Slade, "we wanted to *really* break it, and the project evolved into a hardscape bulge"—or, in Cho's more colorful choice of words, "a pimple emerging from the ground."

The brick, laid in an offset pattern over a waterproofed concrete shell, lends a pixelated appearance to the curved form. On a micro scale, the house mimics the larger development, which consists of a series of boxy structures stepped on a rolling topography. Pixel House stands apart from the neighboring residences, but it is not alienating: It asserts its individuality while blending into the landscape and engaging the community. ■

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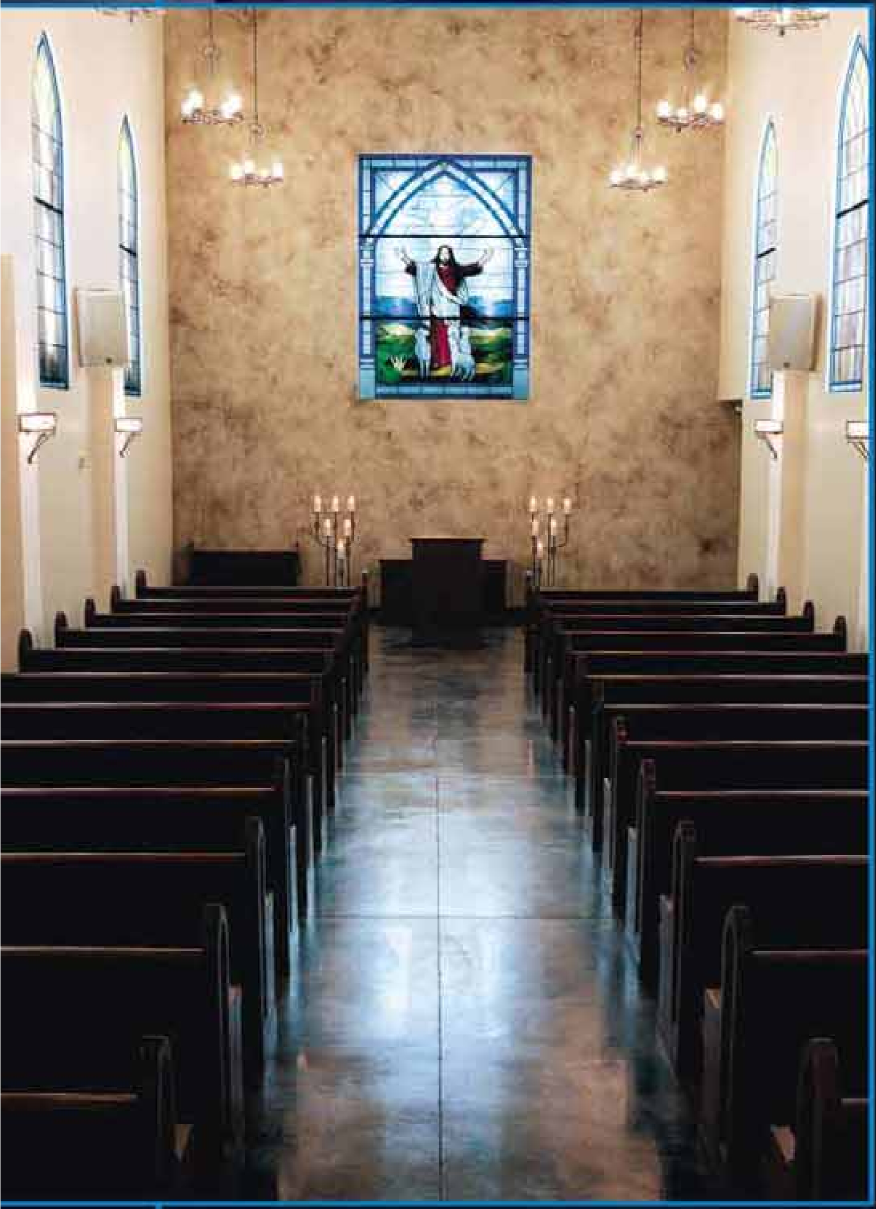

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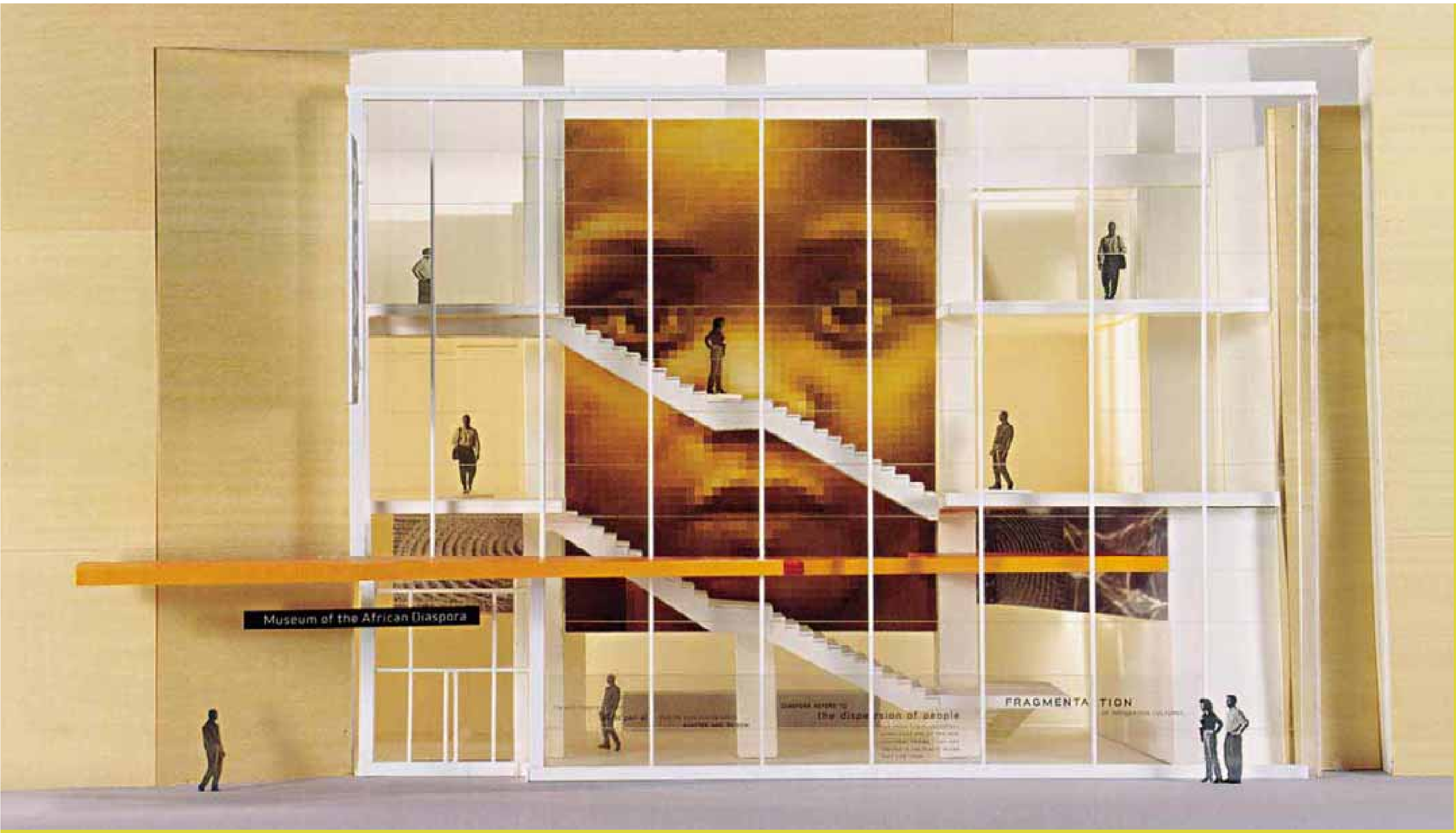
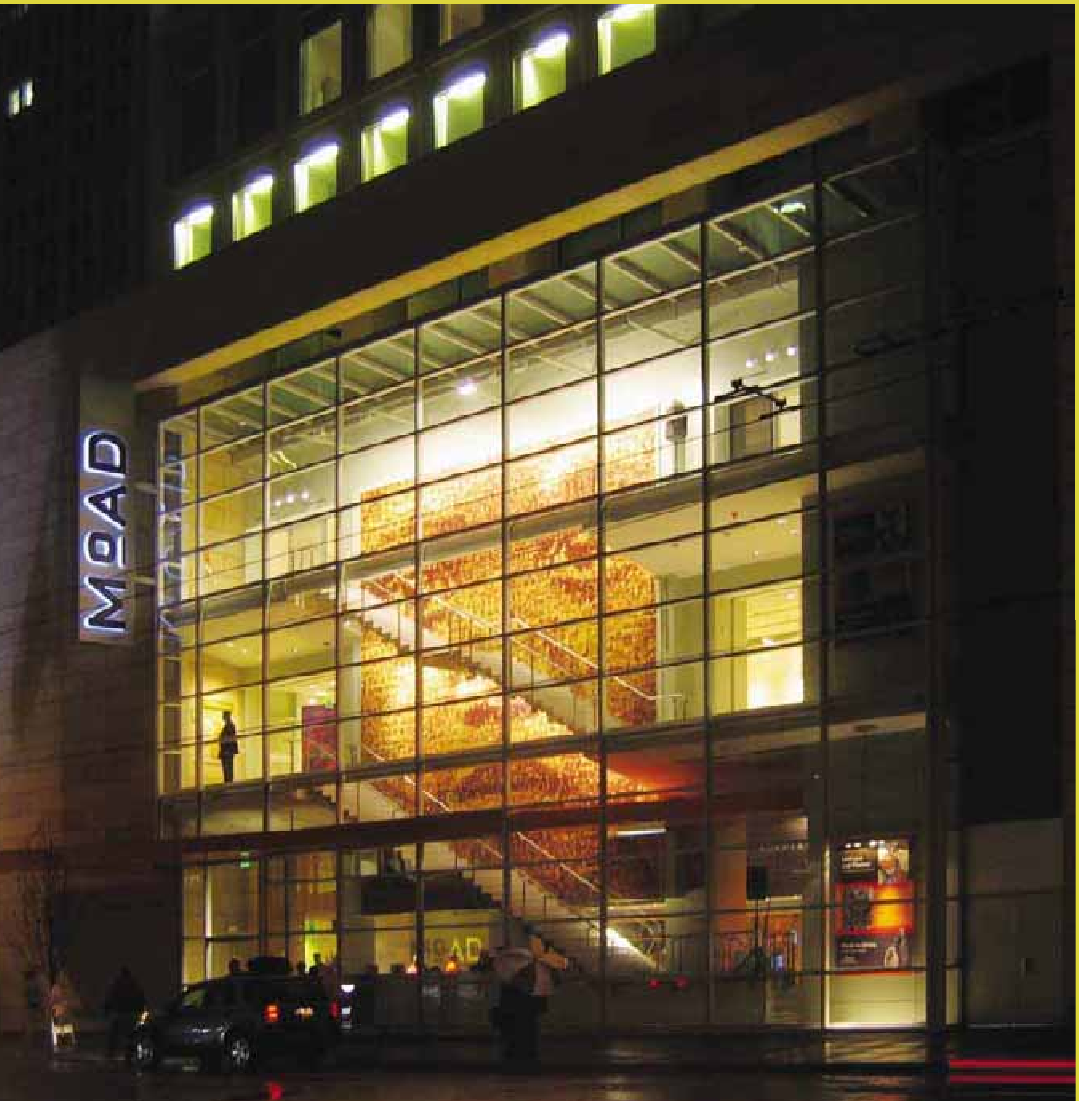

Museum of the African Diaspora
the dispersion of people
FRAGMENTATION



Museum of the African Diaspora, San Francisco

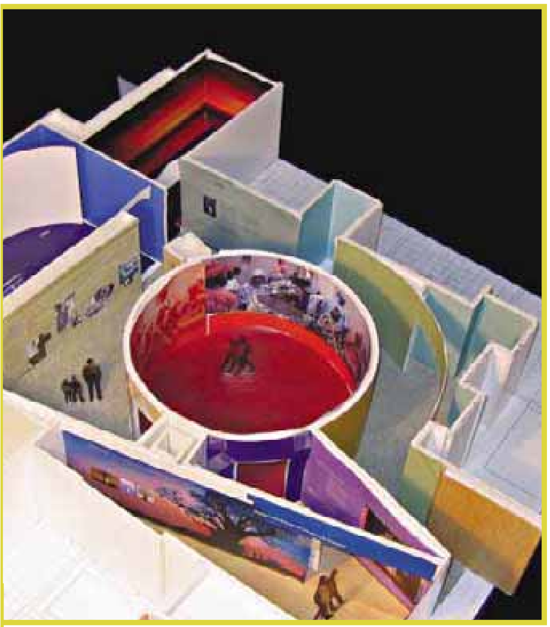
Through various forms of narrative, this museum tells the story of the migration of the African people from their homeland to the rest of the world throughout the course of history. Sussman/Prejza designed the exhibition areas and graphic identity, imbuing the architecture with a sense of the disruption that migration inevitably entails. A huge composite portrait that forms the backdrop of one of the main circulation areas personalizes the space and boldly announces the museum's presence along a busy street in San Francisco's Yerba Buena district.

Turning Surface into Symbol

By Joseph Giovannini

The environmental design firm **Sussman/Prejza** enriches architecture with graphics

Some architects anticipate the inevitable attachment of graphics and signage to their buildings by controlling placement and typeface. Others take cues from graphics instead of treating them as a necessary evil, making a virtue of flat architectural surfaces by coloring constituent parts such as spandrels and mullions to create buildingwide patterns, and elaborating flatness into a mutable quality. It is ironic, then, that a graphic design firm rather than an architect has been at the forefront of making graphics in this way for a generation. The Los Angeles–based environmental design firm Sussman/Prejza has developed and honed a spatial understanding of graphics, logos, and signage—a transition akin to the strokes of paint that Pop artist Roy Lichtenstein lifted off the canvas and turned into sculpture. Off the wall and independent of surface, signs and even color in designs by Sussman/Prejza stand free on their own, becoming markers that articulate and organize space through both placement and message.



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In their wide-ranging practice, the husband-and-wife team of Deborah Sussman and Mark Prejza embrace the multidisciplinary nature of design, not a surprise given their backgrounds—Sussman long worked at the Office of Charles and Ray Eames, and Prejza was trained as an architect and planner. Their projects, both stand-alone and in collaboration with architects, sit at the nexus of graphics, architecture, and city planning; the work ranges from designs for the printed page to the visual identity of entire cities.

Joseph Giovannini is an architect and critic based in New York and Los Angeles.

If their work has helped liberate graphics from the surface, Sussman and Prejza have shown a parallel tendency to localize and identify the space in which they situate their graphics. When Sussman studied in Switzerland on a Fulbright scholarship in the 1950s, "the prevalent idea was the globalization of design," she remembers. "Everybody could use one typeface all over the world. There would be one way of systemizing everything." Sussman, however, had come from a design culture led by such figures as the Eameses, Alexander Gerard, and Charles Moore, who resisted the nascent global approach to design by supporting the various ways that art and culture have always been shaped by locale. "A monoculture doesn't acknowledge the difference between being by the sea or at the top of a mountain," says Prejza. "Localization enriches life."

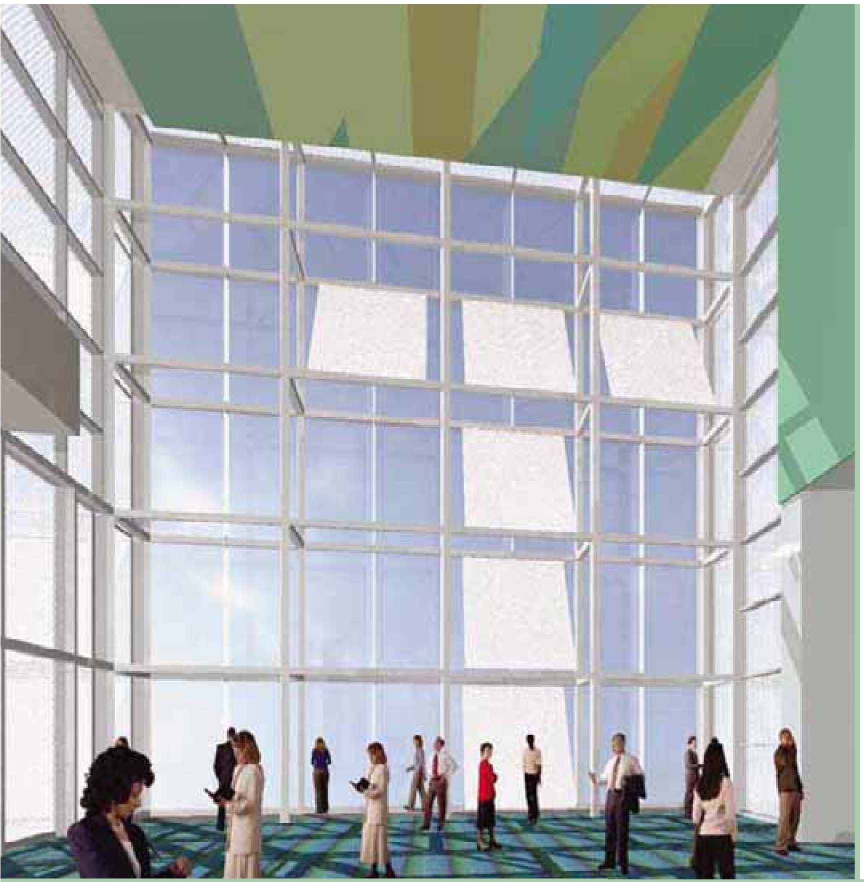
Scroll back in memory to the 1984 Olympics in Los Angeles: If, during the Athens Olympics of 2004, you felt a sense of déja vu as you watched athletes bounding through intense color fields, you can trace the visual echoes back to the brilliant graphic program that Sussman/Prejza invented for the Los Angeles Games over 20 years ago. Together with Los Angeles architect Jon Jerde, the designers developed a kit of graphic parts that was sprinkled like confetti among the many sports and cultural locations hosting the games. Colorful streamers, bunting, and kiosks dotted Los Angeles, along with freestanding, 10-foot-high stars and towering scaffolds strung with banners, all marking venues that became backdrops for television cameras. The cameras, naturally, took to the vivid colors like moths to flame. Visually, Sussman/Prejza owned the 1984 Olympics. In creating a signage program independent of buildings, the firm's graphics and identity markers became a sort of infrastructure in themselves.

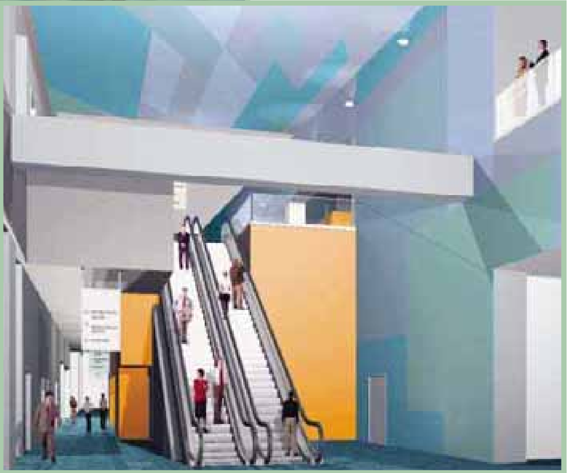
The firm has built on this success ever since. Much of this work has involved developing subarchitectural and extra-architectural aspects of the physical environment that are often overlooked by architects, or the clients who hire them. When officials from Santa Monica commissioned Sussman/Prejza to redesign the city's logo, the firm found the visual DNA of the place in its unique site at the intersection of mountains, beach, and sky. Brilliant sunsets yielded colors that abstracted the city's view along the coast; blue, yellow, orange, and green represented the sea, sky, beach, sun, and mountains, and in part the palette came from the city's original seal. As the commission expanded to include Santa Monica's welcome signs, street signs, and symbols on municipal vehicles, the colors migrated from the logo to the infrastructure and environment, as though flocks of exotic parrots had been released into the streets. The public "Blue Bus," which had inexplicably been painted white for years, became blue again—a spirited Gauloise hue that embodies the pluck of this progressive, upscale seaside community.

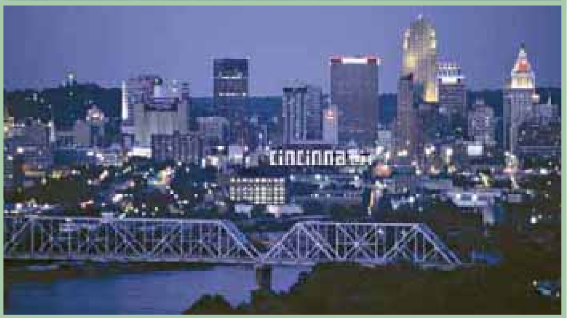
Other cities have come calling since then—Philadelphia, San Diego, and the Los Angeles district of San Pedro. In nearby Culver City, where Sussman and Prejza have their offices, the designers implemented a thorough, citywide graphic identity program. Here, buses were painted green and designs expanded beyond signage to encompass the sign's support structures—steel poles that dance chaotically and are ringed near the top with a collar. Sussman/Prejza also organized a street-furniture program and coordinated a landscaping program with Santa Monica–based Campbell & Campbell. All these elements lent Culver City's streetscape a physical density that gives the commercial arteries a lively urban edge and corrects the ambient urban anomie so typical of the streets of Los Angeles.

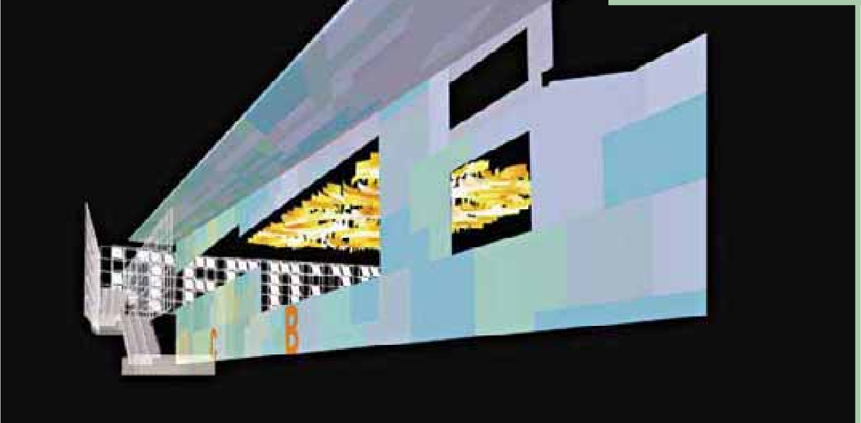
The firm is now in the process of several major projects in which graphics are both spatial and integral to the architecture. No project exemplifies the team's expertise better than the nearly completed Cincinnati Convention Center, which it is designing in collaboration with LMN Architects of Seattle. The graphic artists attached huge letters spelling out the city's name within a structural cage that forms one end of the building. The facade acts as a billboard, but because the words are suspended in space, they also recall the renowned HOLLYWOOD sign nestled in the hills. Here, the letters enliven a dense urban setting and are formed kinetically from individual panels that configure into the word only when seen from certain angles. The sign transcends the word itself to become an interactive urban icon.

The interpretation of environmental graphics takes an









Cincinnati Convention Center, Cincinnati

From a distance, panels attached to a structural cage atop the convention center form the letters of an integrated billboard proudly announcing the building's urban locale (lower right). The calming blue-green palette of Sussman/Prejza's wall finishes and carpet patterns (above and right) was inspired by the Ohio River and helps connect indoors and out. A sense of motion, flow, and circulation is echoed in ceiling details with sinuous curves, like currents in the river (bottom). The 750,000-square-foot center will open later this year.

PHOTOGRAPHY: © JOHN JOHNSTON FOR SUSSMAN/PREJZA (OPPOSITE THREE);
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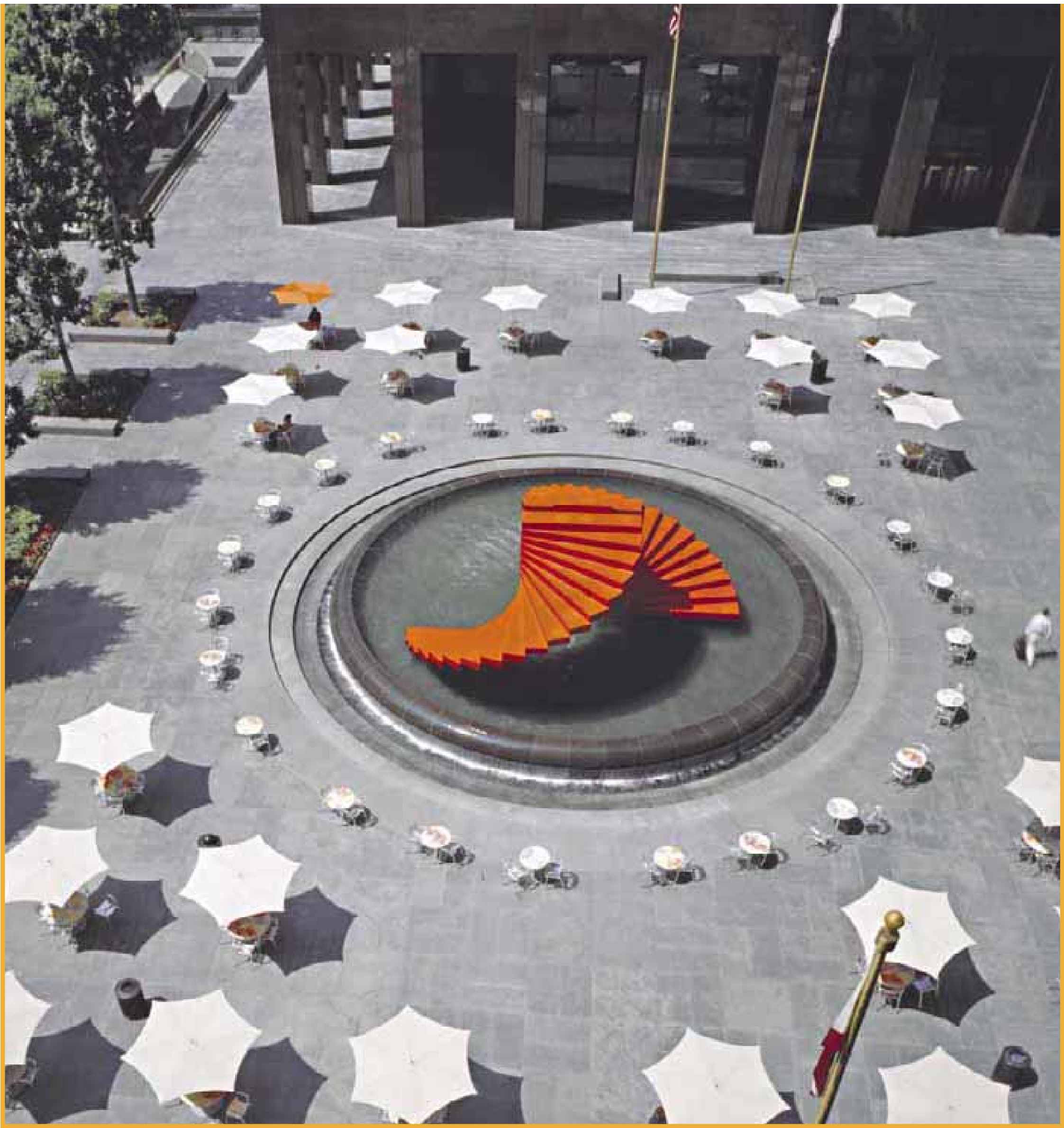
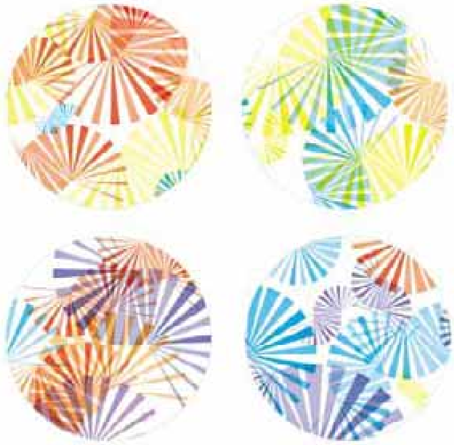
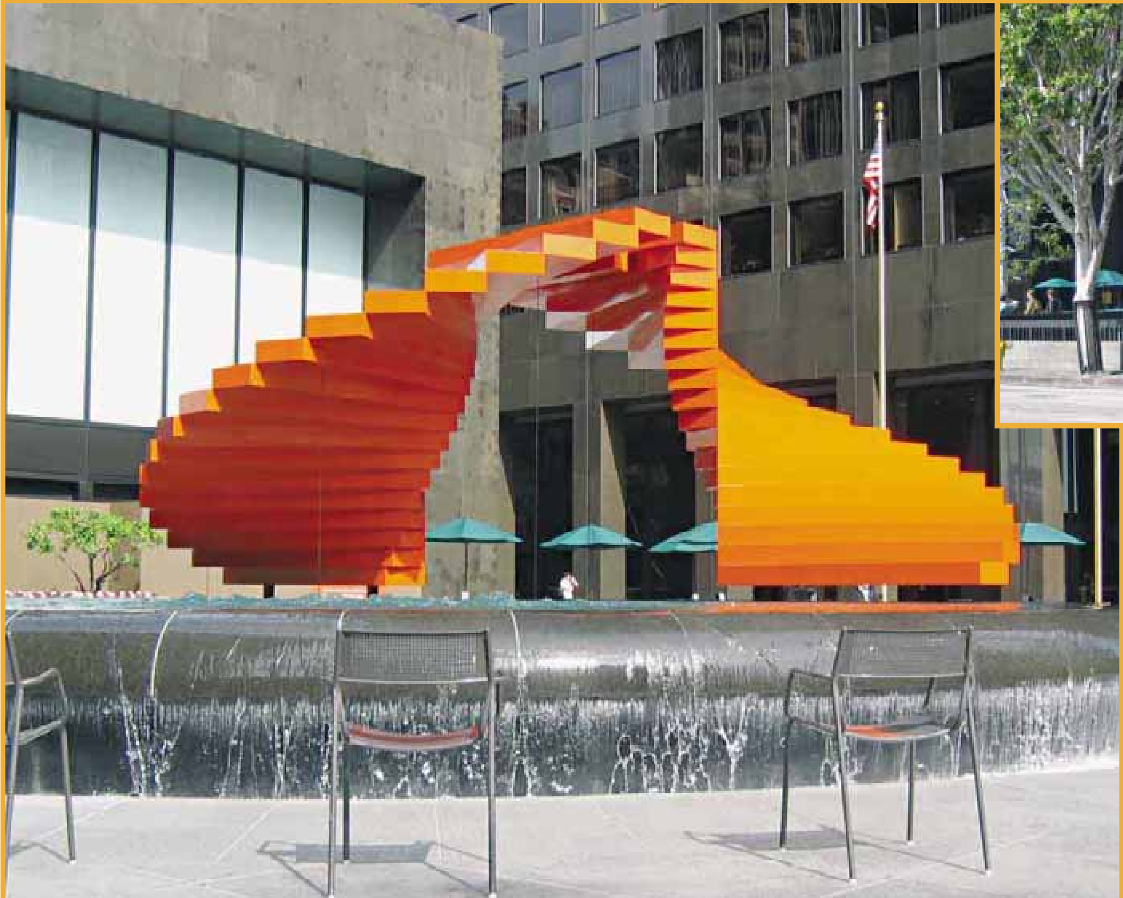




City National Plaza, Los Angeles

When a large bank recast the landmark ARCO Towers as its national headquarters, Sussman/Prejza was tapped to implement a new logo and environmental design for the interiors and the plaza between the buildings. Taking cues from a bright spiral sculpture on the plaza, the designers created a logo (bottom), signage (below), and a lively set of patterns incorporating the logo in various colors, scales, and overlapping motifs. The patterns are scattered throughout the building and plaza—on carpets, wall finishes, and even the café-style tables that surround the sculpture.



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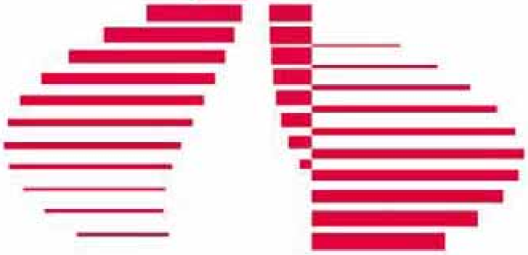

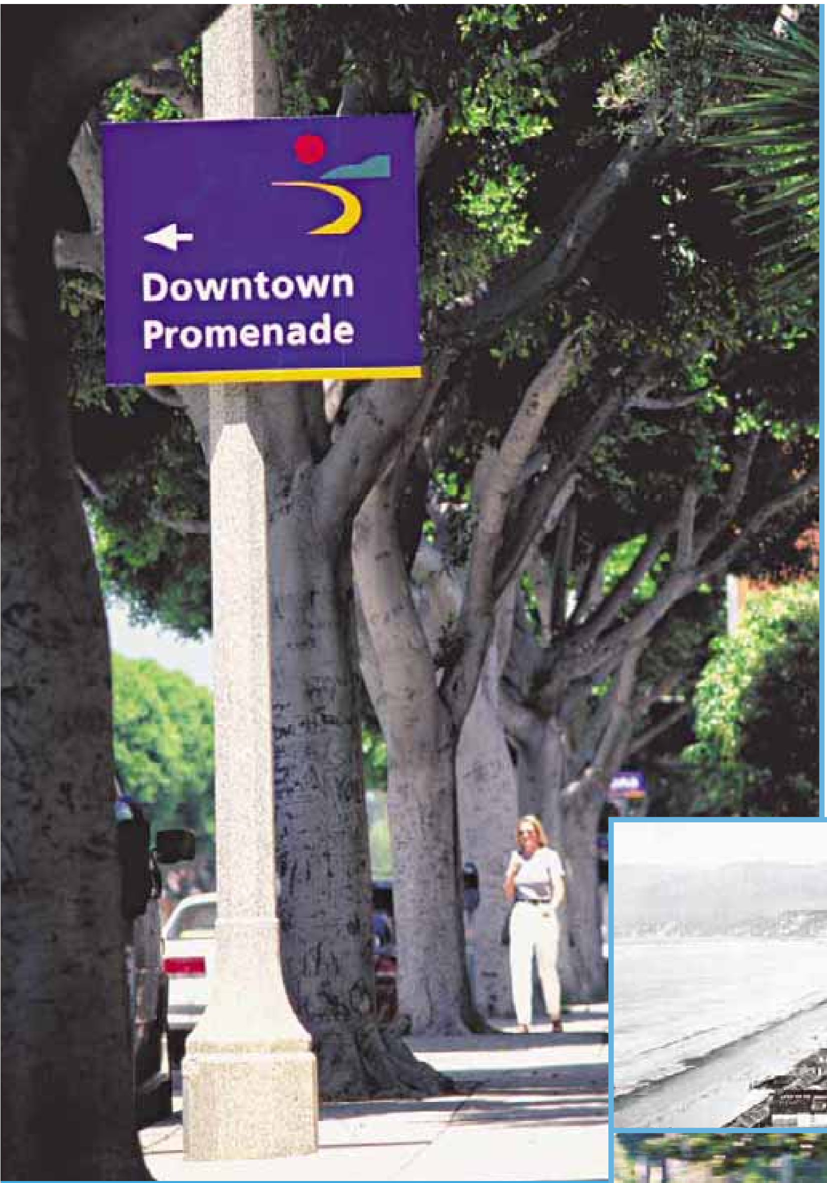

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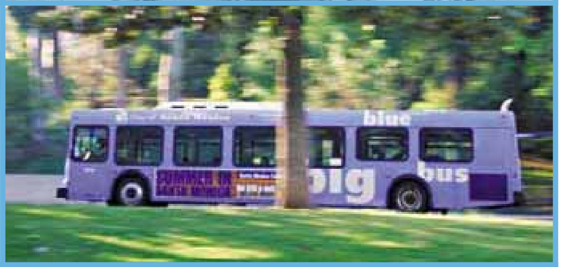

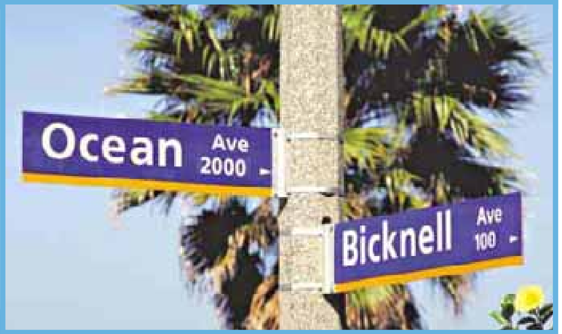

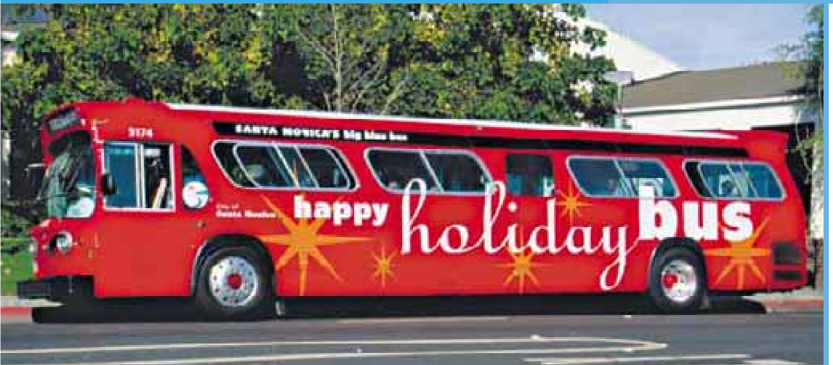

City of Santa Monica, California

Just a stone's throw from Sussman/Prejza's office in Culver City, this upscale, artistic community got a fresh look when the designers implemented a new logo and comprehensive graphic identity for everything from street signs to the public bus system. The bright palette was inspired by Santa Monica's dazzling sunsets and unique location near the mountains, beach, and sea. Following the success of this program, several other cities hired the firm for similar makeovers.

ironic reverse turn in this project. Because the designers frequently develop interiors inspired by the outdoors, they collapse entire landscapes into fields of color applied to walls, ceilings, and floors. "The Ohio River, with its bridges and riverboats, was important in the formation of the city," says Sussman, "so at the Cincinnati Center, the idea was to wrap the visitor in an envelope of color that grew from the river." In the foyers, they designed ceilings and floors with patterns that embody different ways of looking at water, studying Impressionist and Post-Impressionist painters to develop pointillist-inspired carpet patterns in complex colors. By using undulating patterns on the ceiling and walls of the main ballroom, they break down the big-box feel of the space and connect it to the setting. Their graphic program successfully imports the outdoor environment into the center.

In San Francisco's Museum of the African Diaspora, which opened last month, Sussman/Prejza was brought into the design team by architect The Freelon Group to design the logo, graphics, and exhibition spaces. They took the idea of social disruption that Africans have encountered into the entry hall and facade by creating a long, rectangular plane that floats across the three-story space and erupts through the facade, forming a canopy. It's a slash of color made concrete as a part of the architecture. Sussman/Prejza also made a poignant portrait architectural—they tapped Runaway Technology to transform a photograph of a young African girl, taken by Chester Higgins, Jr., into a two-story photomosaic composed of more than 2,000 donated portraits of other Africans. The gigantic face claims ownership of the space and personalizes it. Inside, a mix of immersive multimedia-exhibit experiences and places for public and private reflection lend gravitas to the narratives of the African experience in different places and throughout human history.

With AC Martin Partners, Sussman/Prejza is designing new environmental graphics for the twin ARCO Towers in Los Angeles—landmark skyscrapers now being recast as headquarters for the City National Bank. The designers have taken their visual theme from a spiral sculpture that is the centerpiece of the plaza. "We often start with a three-dimensional thing as an inspiration for a graphic," says Sussman. Ironically, the sculpture is by Herbert Bayer, a renowned Bauhaus graphic artist who worked, like Sussman/Prejza, outside the classic limits of his discipline. In a reversal of their usual process, the designers have transformed the sculpture back into a graphic identity and iconographic logo that appears on windows, signs, carpets, and tabletops. "The question is how to give new life to the building and still respect the original," she says. "We're taking something that exists and making it new." ■

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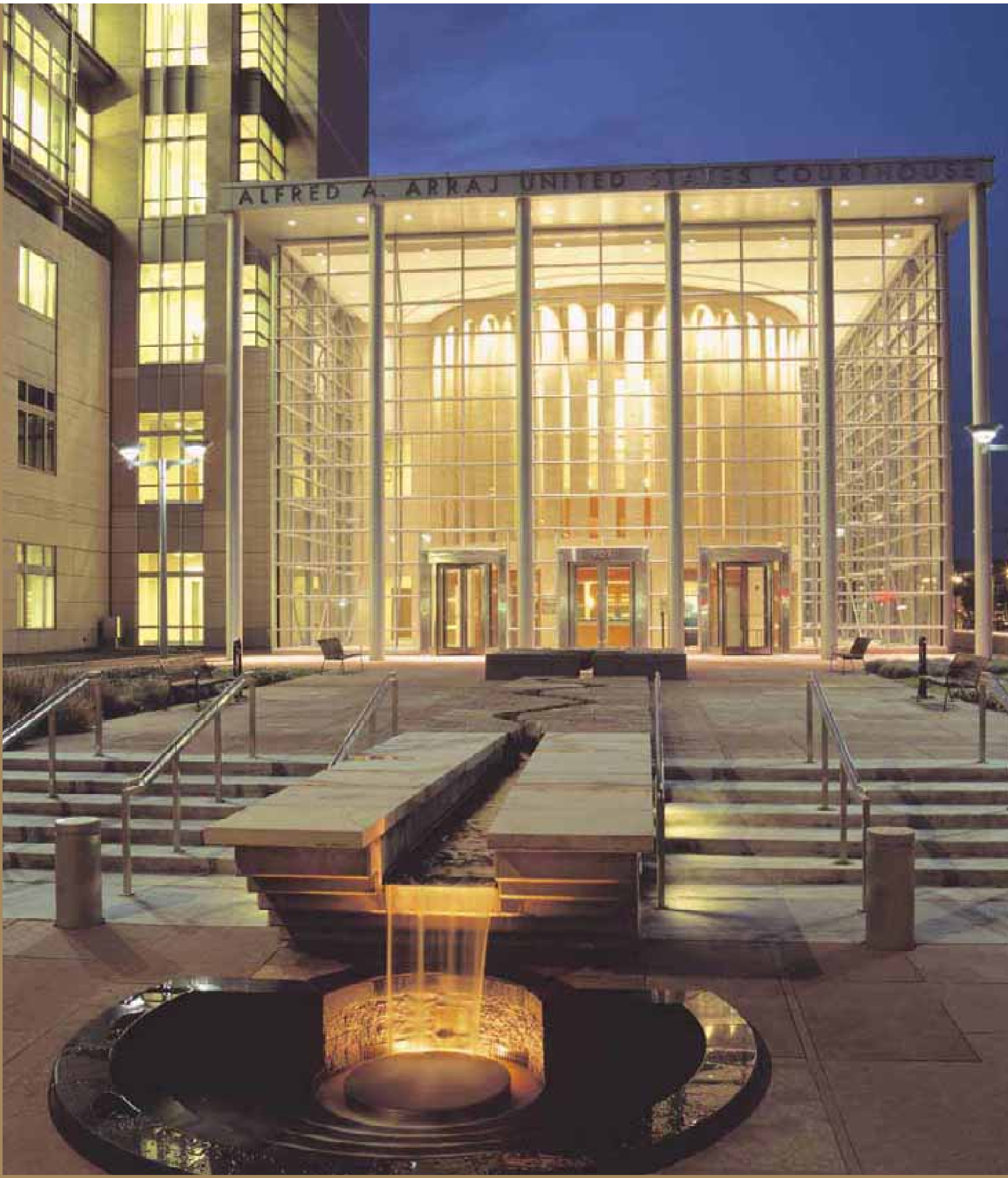
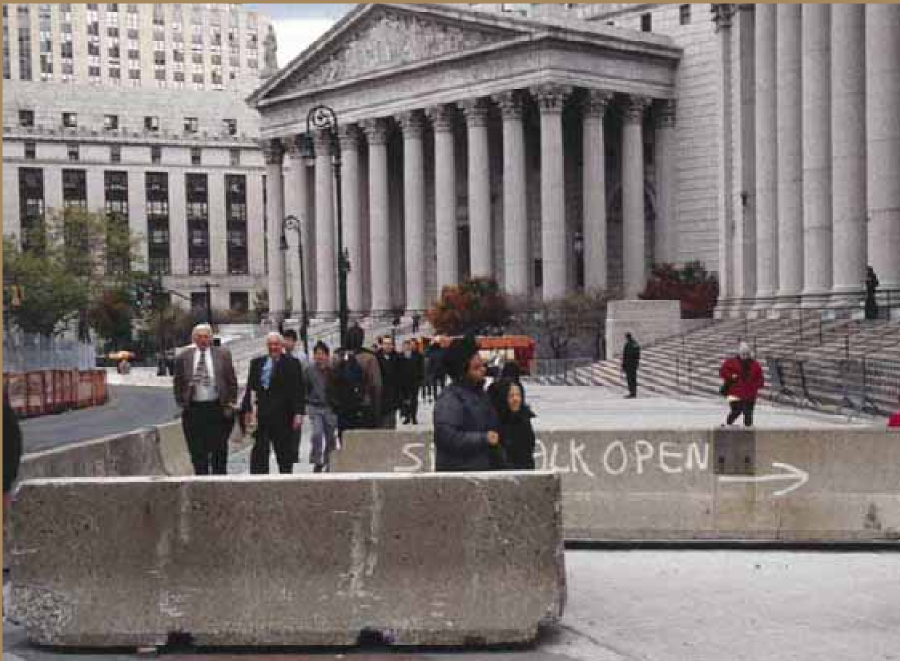
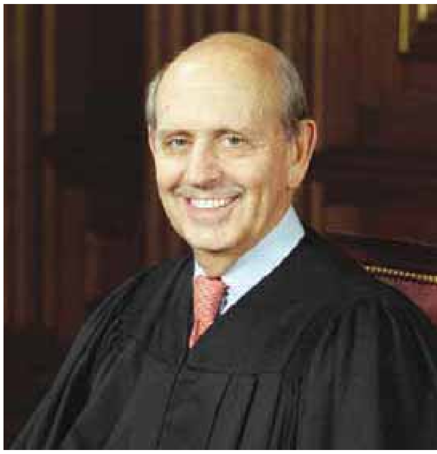

ALFRED A. ARRAJ UNITED STATES COURTHOUSE

The architecture of Boston's John Adams Courthouse (restored this year by CBT/Childs Bertman Tseckares) dignifies the public's role in the courts (left three), in contrast to crude security measures installed at Lower Manhattan courts in New York (right). Security issues at the Alfred A. Arraj U.S. Courthouse in Denver (above) have been addressed in a publicly welcoming way by architects HOK, with Anderson Mason Dale.



The Importance of Openness in an era of security



A conversation with Supreme Court Justice **Stephen G. Breyer**

By Jane C. Loeffler

*Courts increasingly are called upon to strike a balance between protecting Americans from acts of terror and preserving civil liberties. For some jurists, who may be targets for terrorists and vengeful defendants alike, striking that balance in the design of court facilities brings the issue close to home. Each new attack brings calls for greater fortification and less public access—potentially threatening a core value of democratic government. Supreme Court Justice Stephen G. Breyer confronted these dilemmas working with Harry Cobb (of Pei Cobb Freed) in planning the John Joseph Moakley Federal Courthouse on Boston's Fan Pier [*RECORD*, March 1999, page 108]. Speaking at the dedication of the newly renovated John Adams Courthouse in Boston's Pemberton Square (CBT/Childs Bertman Tseckares, 2005), Justice Breyer renewed his call on public officials to consider the values associated with open public buildings before making security decisions of lasting import. Those remarks prompted this interview.*

ARCHITECTURAL RECORD: *How can government officials* not *heed advice from security experts?*

STEPHEN G. BREYER: People in any government agency who are in positions of authority have to understand that the issue of security and the issue of openness are both important, and they sometimes argue in opposite directions. One is sometimes tempted simply to turn matters over to security officials. But security officials operate under pressures that force them to err on the side of security—even if that means closing off a building that was meant to be open to the public. This isn't a ground for criticizing them; that's their job. But it is a ground for criticizing the people in authority, because they must understand not only the importance of security but also the importance of openness.

Openness can make an enormous difference both symbolically and practically. It matters whether a public building is welcoming to the public or shuts itself off as a fortress. Persons in authority have to become informed about security needs to make decisions that require intelligent balancing. Their decisions should favor security if they conclude that the need for security is great enough to warrant a departure from openness; but they should focus on the details and squarely face this issue.

AR: *U.S. embassies are effectively closed buildings at this time. How do you argue for openness when security experts say the risk is too high?*

SB: You have to be brave enough to turn them down. Or see to modifications when the circumstances call for it. If we are not brave enough to say no when security needs don't make much sense, then we'll end up with buildings that look like our embassy in Chile, which is my example of something that looks like a fortress. People in Santiago laugh at it.

When I visited London last year, they were planning to close off the roads surrounding our embassy. I asked the embassy people why. The justification was that someone could approach the embassy with a bomb. Yes, that's true. You could turn every public building into a Fort Knox using such a theory. If the secretary of state or a deputy secretary of state actually looked into it, and heard the argument, and came to the conclusion that central London streets must be closed off, then I would respect that judgment. I think it's a matter that calls for careful consideration by such a high official before you close off a main street in central London.

It is very easy for anyone to appear to be very popular and responsible by saying 'I'm worried about human life.' Well, I'm worried about it, too. But our architecture must not wall off the government from the people. The Constitution permits people to govern themselves; the people are the government. The value of openness is such in a democracy that you should consider it carefully and give it considerable weight.

AR: *How did your own experience in planning Boston's Moakley Federal Courthouse inform your views?*

SB: When we built our courthouse in Boston, I felt strongly that it belonged to the taxpayers who paid for it. It should be apparent that such a courthouse—a public building, a beautiful building on a beautiful site—does not belong to the judges, nor to the lawyers. It belongs to the people of Boston. It's hard to work with bureaucratic institutions that are single-minded. Security people may be interested 99 percent in security; GSA [the General Services Administration that builds federal buildings] may be interested 99

Jane C. Loeffler teaches in the Honors Program at the University of Maryland, College Park, and has written for RECORD *about embassy design.*

PHOTOGRAPHY: © FRANK OOMS (OPPOSITE, TOP RIGHT); JONATHAN HILLYER (OPPOSITE, LEFT THREE); JAMES S. RUSSELL (OPPOSITE, BOTTOM RIGHT)

At the Arraj Courthouse, the plaza and lobby pavilion are publicly welcoming, yet discourage vehicle bombs and limit a terror attack's damaging effects.

percent in saving money, and a group of judges may be interested only in courtroom acoustics. Yet it's possible to break through any group's single-mindedness to promote balance. I think the Boston courthouse is an example of how that can happen. Judge [Douglas] Woodlock and I spent a day a week for about three or four years working on that courthouse. Was it worth a day a week of our time? I think it was. It was an important project for the public.

AR: *What was the thinking behind the design?*
SB: Harry Cobb, the architect for our courthouse, showed us pictures of a courthouse in 17th-century Virginia. He also showed us beautiful Beaux-Arts-style courthouses built in the 19th century, of which the [John Adams] courthouse in Boston is an example. In each instance, the courthouse makes a statement that it is a public building, that the public gathers in that building, and that there is a judge who will carry out public business there. What works architecturally for a single-room courthouse can work when you have four or five courtrooms in a building, but it's very hard to design when you have 20 courtrooms. Inevitably, the building begins to look like a hospital, an office building, or an apartment house. Cobb showed us an example of a courthouse in Los Angeles that looks like a prison. You would not want people to come into a courthouse that looks like a prison.

The challenge is to build a courthouse that tells people—through what it looks like and how it's used—that it isn't a prison, that it isn't an apartment house, and that it isn't a hospital. Rather, it is a public building where a high-level official—a judge—will deal face-to-face with the most humble, ordinary citizen of the United States and spend as much time on that citizen's problems as circumstances call for.

I learned more from Harry Cobb. Before that experience, I think I would have said that we should have a decorated building, and we should have Classical forms. I learned that buildings from many different periods can say many different things. You can have a lovely Modern building or you can have a bad one. You can have a lovely Classical building or one that looks tacky. Our consulate in Munich, for example, is a Modern building that is both attractive and interesting. It's a box, but an interesting box, one that has charm and is beautiful. One cannot automatically choose Classical over Modern styles. On the contrary, what matters, I believe, is the individual building.

AR: *Is there anything remarkable about the design of Moakley's courtrooms?*
SB: The courtrooms in Boston put the judge deliberately at the same level as the lawyers and focus on the area in front of the judge, the jury, and the witness. That focus promotes a conversation among all the participants. The best example I saw of that is in the Second Circuit courtroom designed by Learned Hand [in Cass Gilbert's 1936 Federal Courthouse in New York City]. It looks like a sitting room. The judges in that famous courtroom are at the same eye level as the lawyers. Why? When lawyers are forced to carry on a conversation, the judge is more likely to get their truthful opinion, less likely to get playacting. The design facilitates the work of the court.

AR: *You are obviously proud of the product.*
SB: It shows what's wonderful about architecture. When you walk into a well-designed building you can feel your spirits rise. When a person walks into the Boston courthouse, he doesn't need to be an art connoisseur to appreciate the Ellsworth Kelly paintings. All he needs to do is open his eyes, and feel his spirits rise.

AR: *Was the Moakley courthouse altered after 9/11?*
SB: Yes, security required some changes. As I have said, security has to be taken into account, but you must try to strike a reasonable balance. You don't just ignore security.

AR: *Many architects equate openness with transparency. Do you think open architecture needs to feature glass?*

PHOTOGRAPHY: © FRANK OOMS (THIS PAGE AND OPPOSITE)

SB: No, that isn't what I had in mind. The plaza in front of the Supreme Court of the United States is open. Every citizen of the United States can walk across it, walk up the steps, and enter the building. We do have a security system; visitors must walk through an arms detector. That is an unfortunate but necessary concession to the problem of security that we face. But if we ever were to close off the plaza, or close off the building, I think we would do irreparable damage to the Constitution and to the country. It is important in a democracy that people be able to come into their public buildings, certainly the courts.

AR: *So you definitely want tourists to be able to visit the Supreme Court?*

SB: Absolutely. We used to have a million visitors a year. Unfortunately, because people are traveling less, because of concerns about security, and because of construction [at the adjacent U.S. Capitol Visitors' Center], the number of visitors has fallen to below half a million. I very much hope that it will go back up once the construction is finished. It is important that people use the building and see it, especially that children use it and see it. That's part of an education for them of how our democracy works. It encourages them to participate in our democratic government.

AR: *What was your reaction to Boston's newly renovated John Adams Courthouse that now houses the Massachusetts Supreme Judicial Court and the Court of Appeals?*

SB: I liked it. I think it's a beautiful courthouse. I'm so glad they restored it. The architecture, the murals in that huge hall—all of it shows the optimism that people felt about the country a hundred years ago.

AR: *Have you any suggestions on how we can better assess risk?*

SB: When I studied risk for my academic work, I learned that not all risks can be avoided. There are many tiny risks that are not worth eliminating. You cannot cure tiny risks at a large cost or the country will soon be bankrupt.

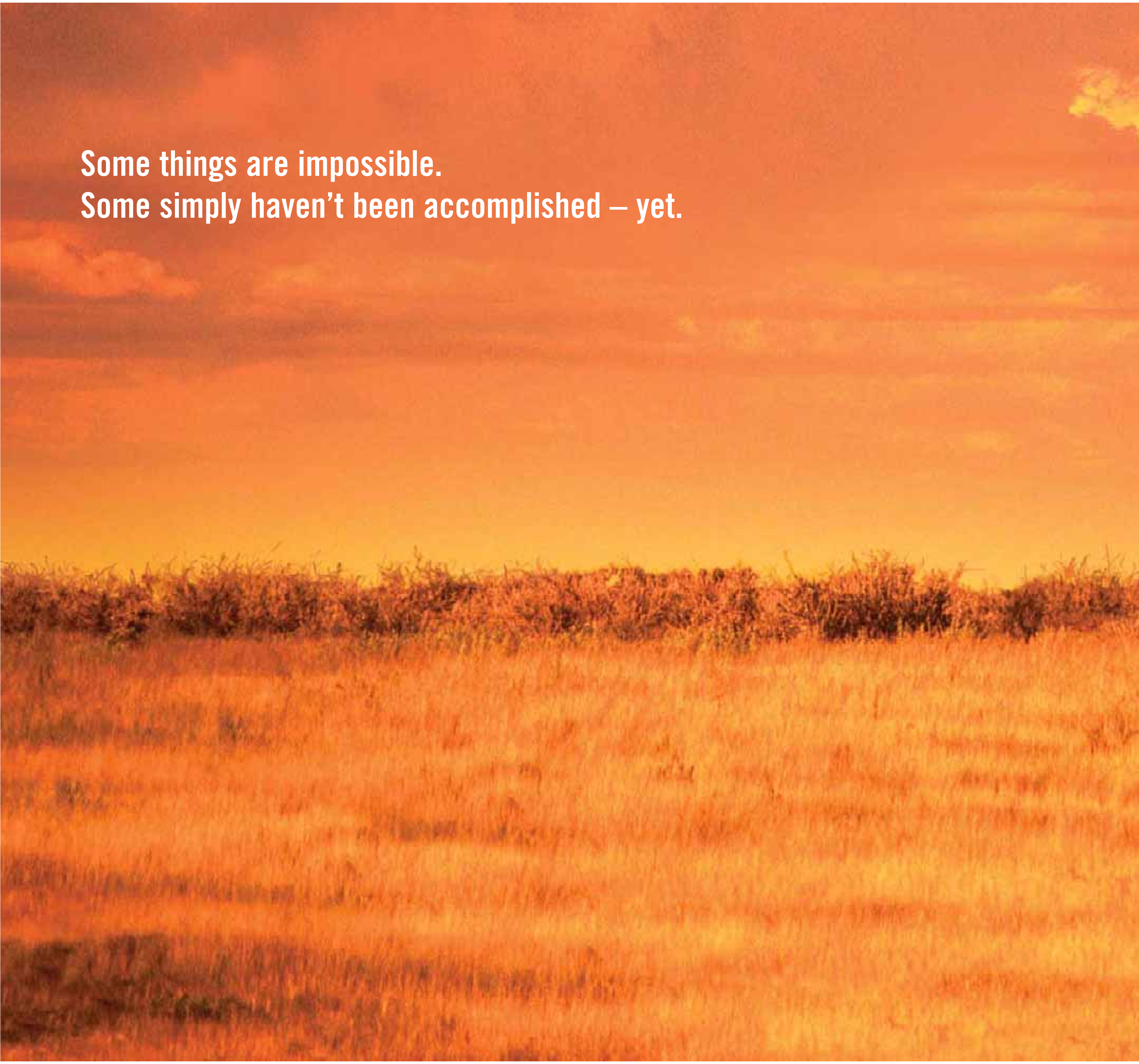
AR: *Should architects play a role in making security decisions?*

SB: I think they should try and get involved. The only thing we can do is create a procedure similar to the one that worked for us in Boston. That procedure involves the government decision maker, representatives of the various security agencies, and others working together with the architect. The architect must be present, because the architect can sometimes work out a way to diminish the risk while preserving other values, such as openness. That's an architect's job.

AR: *Can we balance security and openness?*

SB: Yes. But my experience tells me that there are no absolute answers. We can ask government policy makers to become involved in the process, to bring in the architects and listen to them, and talk to the security people. Everyone needs to understand that there are competing values at stake. The task is to work out a solution that respects all of those different values. That can be done. And it can lead to a superior solution and a better building. ■

Seattle's Federal Courthouse (NBBJ and Fentress Bradburn) presides over a green setback. A lobby water feature doubles as a personnel barrier.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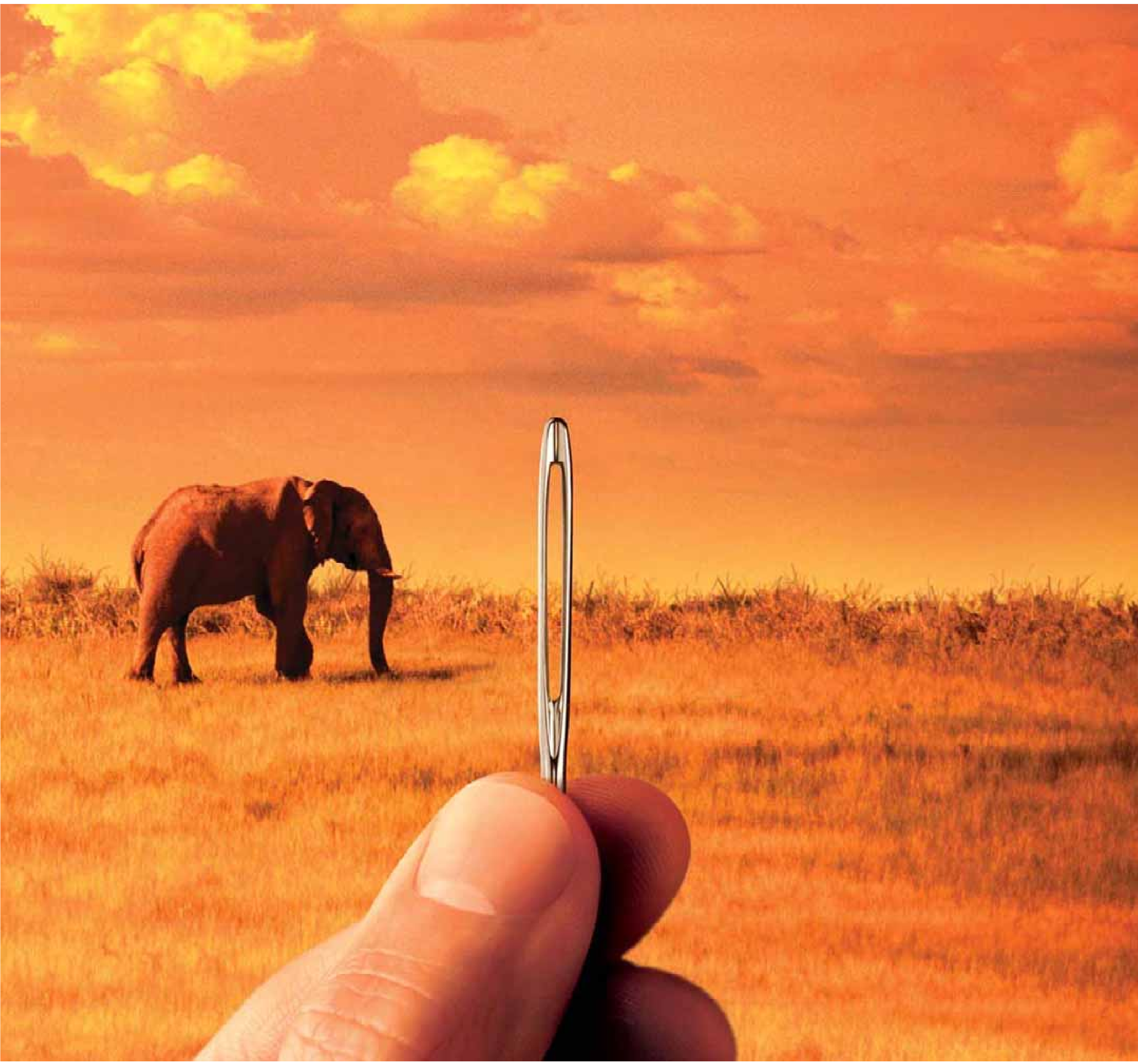

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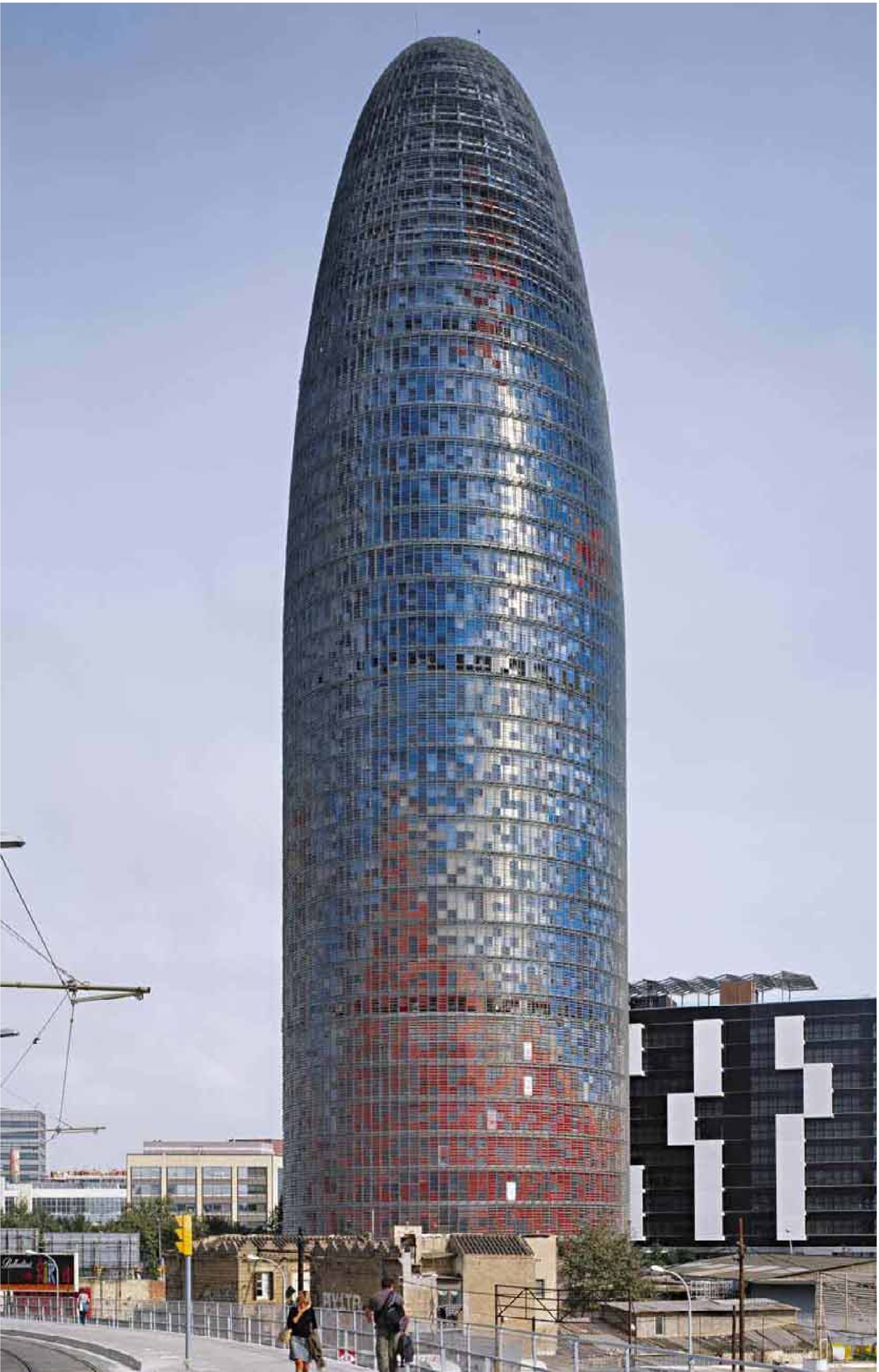
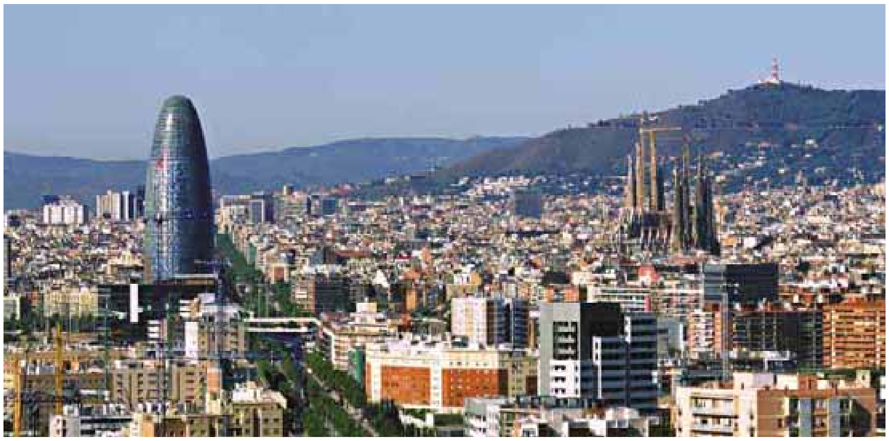
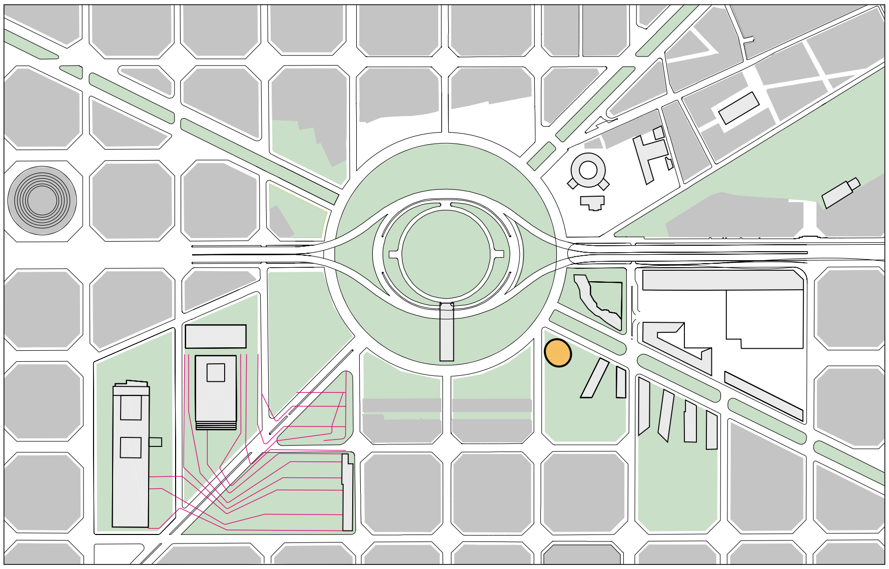


The Agbar Tower and a hotel stylishly patterned in black and white by Juli Capella Samper (left) are the first structures in what is planned as a 40-acre commercial development that will transform the Plaça Glories (site plan, opposite). The tower's intriguing liquid surface renders it a less-imposing competitor of the city's skyline icon, Gaudí's Sagrada Familia cathedral (photo, opposite).

The effervescing surface of the **AGBAR TOWER** is the startling symbol **Ateliers Jean Nouvel** has created for Barcelona's newest commercial district

By James S. Russell, AIA





PHOTOGRAPHY: © ROLAND HALBE, COURTESY THE MUSEUM OF MODERN ART, EXCEPT AS NOTED; PHILIPPE RUALT (OPPOSITE)

Barcelona's Plaça Glories is anything but glorious. The subway exits to a beat-up sunken alley. Reaching the street, the visitor faces a throng of vehicles headed up a massive elevated roundabout that flings them onto the intercity highway network. Rising improbably out of the blocks of crumbling and boarded-up warehouses and factories is what Jean Nouvel calls his "ambassador," the bullet-shaped, 31-story "symbol of the international metropolis," the Agbar Tower.

It's hard to miss Nouvel's tower on the city's skyline, once dominated only by Gaudí's Sagrada Familia Cathedral. That's because Agbar is a 466-foot-high advertisement for the city's desire to remake the Plaça into a new commercial center in a section of the city located apart from established centers of commerce. By creating a newly well-connected, 40-acre, high-density development, Barcelona planners hope to spur growth without sacrificing the historic core.

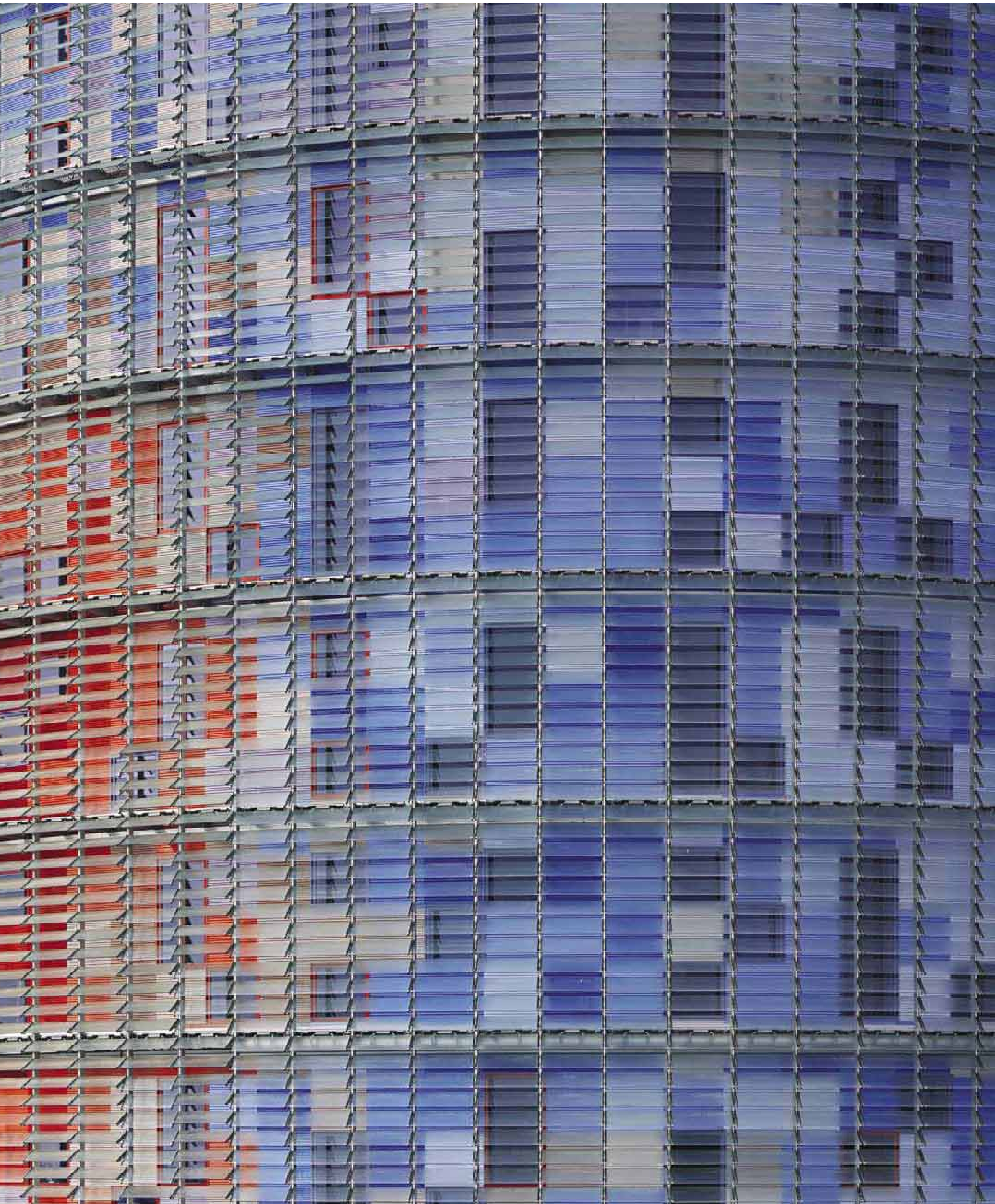
Under a vast new green square, the city will bury the roundabout, creating a transportation nexus comprising an added subway line, a regional-rail station, and a high-speed intercity rail line. Agbar and a recently built hotel will be joined by other commercial development around the green. Confronted with today's scruffy surroundings, all this may seem unlikely, but consider that the city has already extended its famous Diagonal boulevard essentially from Agbar's door through the adjacent Poblenou neighborhood to the oceanfront Barcelona Forum, where new parks, marinas, commercial and residential development, and a convention center have all been willed into being by officials in a few short years [RECORD, June 2004, page 109].

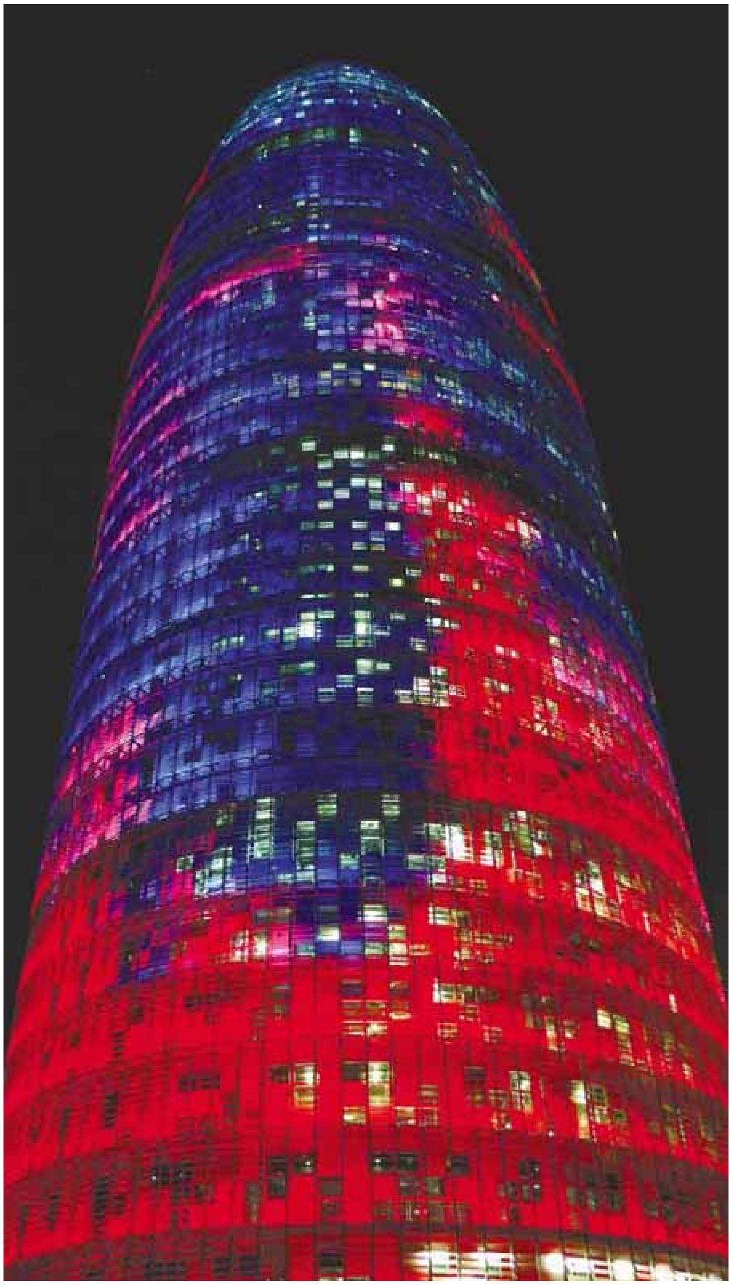
Project: *Agbar Tower, Barcelona*
Architects: *Ateliers Jean Nouvel, with b720 arquitectos—Jean Nouvel, Jean-Pierre Bouanha, Vander Lemes, Cristiano Benzoni, Pablo Garrido, Alexa Plasencia, Cristina Algás, Francisco Martínez, Elisabeth Farrés, Julie Fernández, Emmanuelle Lapointe, Pascaline Paris, Florence Rabiet, Juan Alberto Aibar, Marc Martínez, Doris Sewczyk*
Consultants: *R. Brufau & A. Obiol (structure); Gepro (HVAC)*
Contractor: *Dragados*

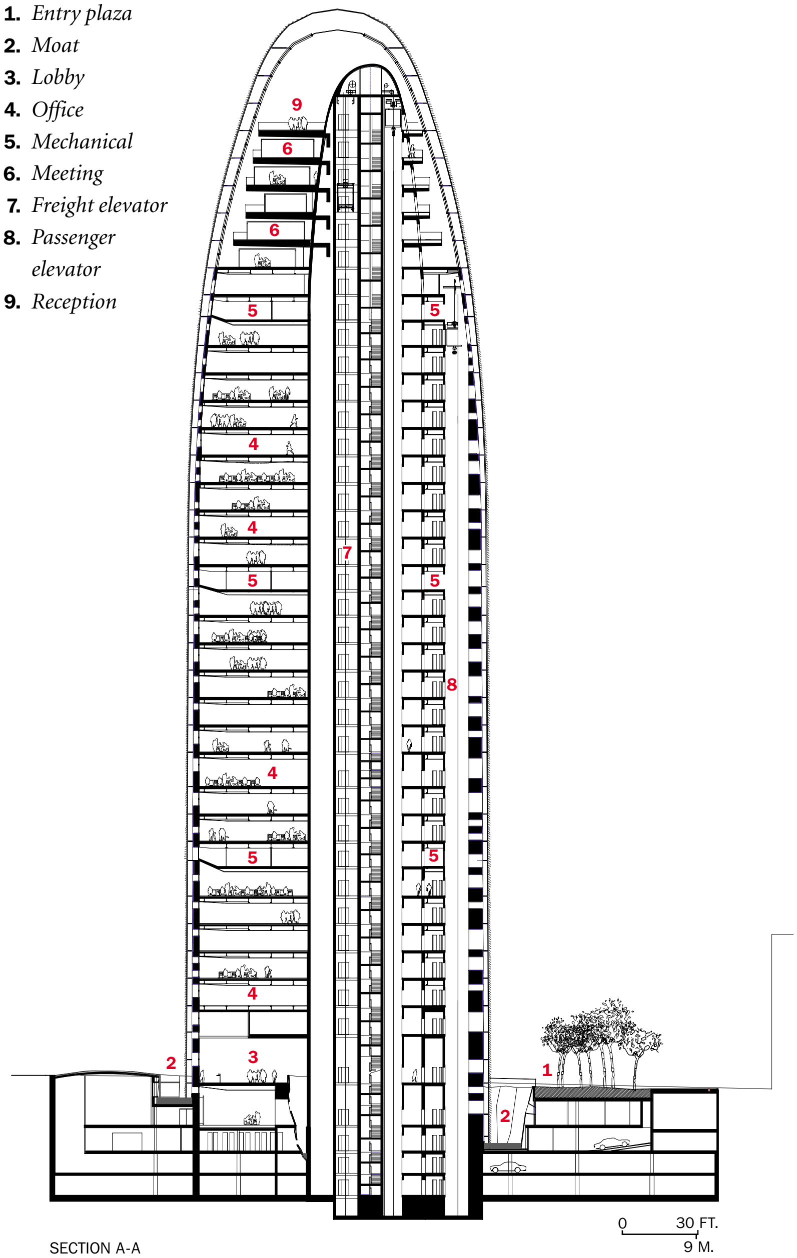
Nouvel's little joke

For a symbol, Nouvel's tower takes itself surprisingly unseriously. Agbar is the local water company, and Ateliers Jean Nouvel, with b720 arquitectos, has built for it a giant bubbler. The inky surface appears to ripple under a liquid film, sparkling through a jigsaw-puzzle of color.

Whether or not you are in on this little joke, Nouvel has created the most sensuous surface for a tower perhaps ever. It's the culmination of his long exploration of the tactile and visual qualities of surface. (Ghostly images of performers scud across the painted metal panels of Nouvel's Guthrie Theater, for example, which nears completion in Minneapolis.) The local project architect, Jean-Pierre Bouanha, explained on a visit how the surface of the tower was scribed into a 1-square-meter-grid (11 square feet), onto which was applied ridged, painted-metal panels over insulation. Below the uppermost floors (which are clad entirely in clear glass),







1. *Entry plaza*
2. *Moat*
3. *Lobby*
4. *Office*
5. *Mechanical*
6. *Meeting*
7. *Freight elevator*
8. *Passenger elevator*
9. *Reception*

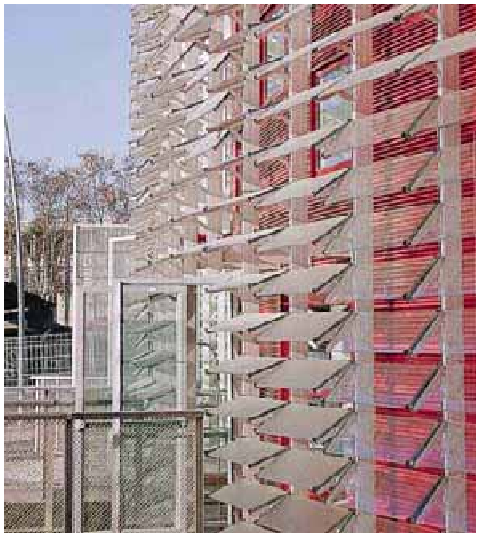
PHOTOGRAPHY: © JAMES S. RUSSELL (THIS PAGE, BOTTOM)

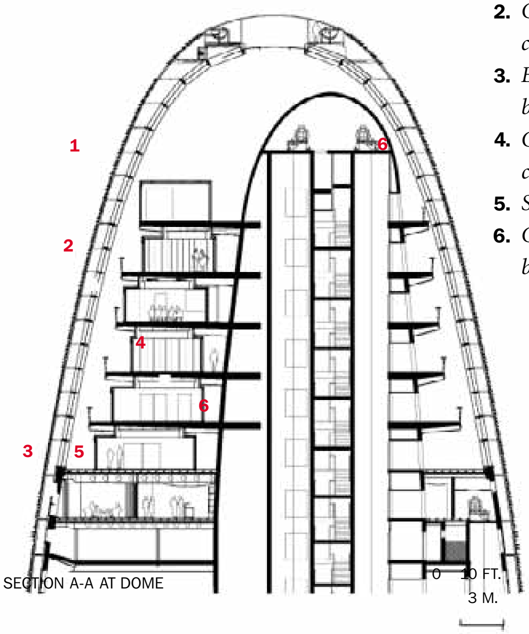
the metal panels descend in tints that vary from white through a range of blues. From the bottom, panels of orange, fuchsia, and red (inspired, Bouanha says, by the pink-tinted pinnacles of nearby Montserrat) rise to meet the veils of blue. Impishly, blotches of red spread amid the upper-level fields of blue; a lightening-bolt of yellow appears as if by accident; squares of green seem to grow near the shrubbery wrapping the base.

In Agbar, Nouvel abandoned the acres of gridded glass that are the signature of skyscraper office towers. Instead, he opened only about a fourth of the panels in an apparently random pattern as red-trimmed windows (in clear glass, except for a few tinted with integral film to enrich the palette). Another remarkable aspect of the design is that those windows are punched out of a continuous exterior concrete bearing wall that rises almost the entire height of the tower.

A layer of glass louvers covers the tower. Fixed and untinted, each glass blade is ceramic-fritted in dot patterns of a wide range of densities. The colored panels blur when seen through this varying glass scrim, which is why the surface seems to possess an indeterminate depth and liq-

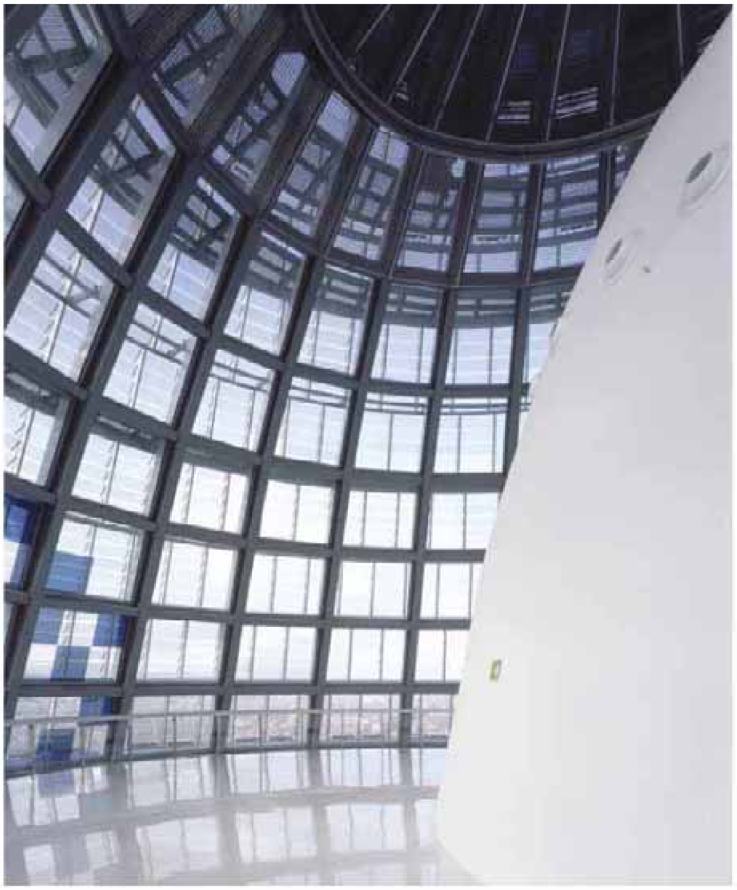
The rows of fixed, clear-glass, ceramic-fritted louvers that cover the tower hang from a framework (right) 27 inches outside the building envelope—making room for maintenance walkways floored in an openwork grille (opposite). The louvers add a liquid surface effect to the colored wall panels, dramatically enhanced by lighting at night (above).



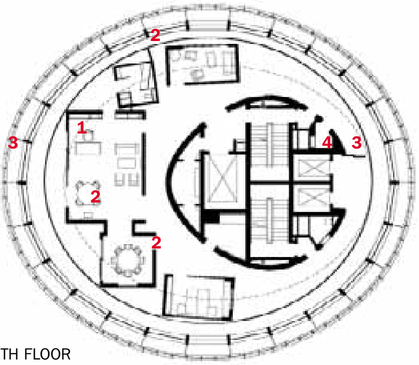

1
2
4
6
6
3
5
0
10 FT.
3 M.

SECTION A-A AT DOME

1. *Louvers*
2. *Glass-and-metal curtain wall*
3. *Exterior concrete bearing wall*
4. *Cantilevered concrete floor*
5. *Steel-beam floor*
6. *Core concrete bearing wall*

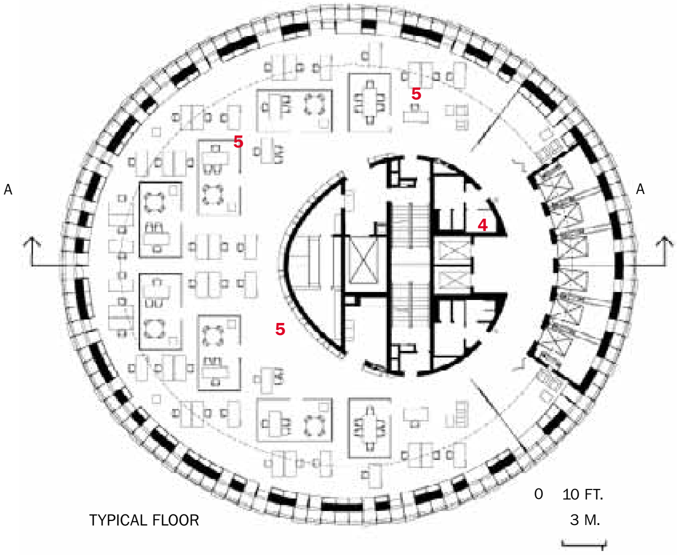


The uppermost tapering floors cantilever from the core (section, above left), free of nonbearing glass walls held on a grid of steel. They rise from the outer concrete wall to a fully glazed dome. The building's offset core (plans, below and left) rises to its own dome, visible within a top-floor reception space (above).



THIRTIETH FLOOR

1. *President's office*
2. *Office*
3. *Open to below*
4. *Elevator vestibule*
5. *Open work space*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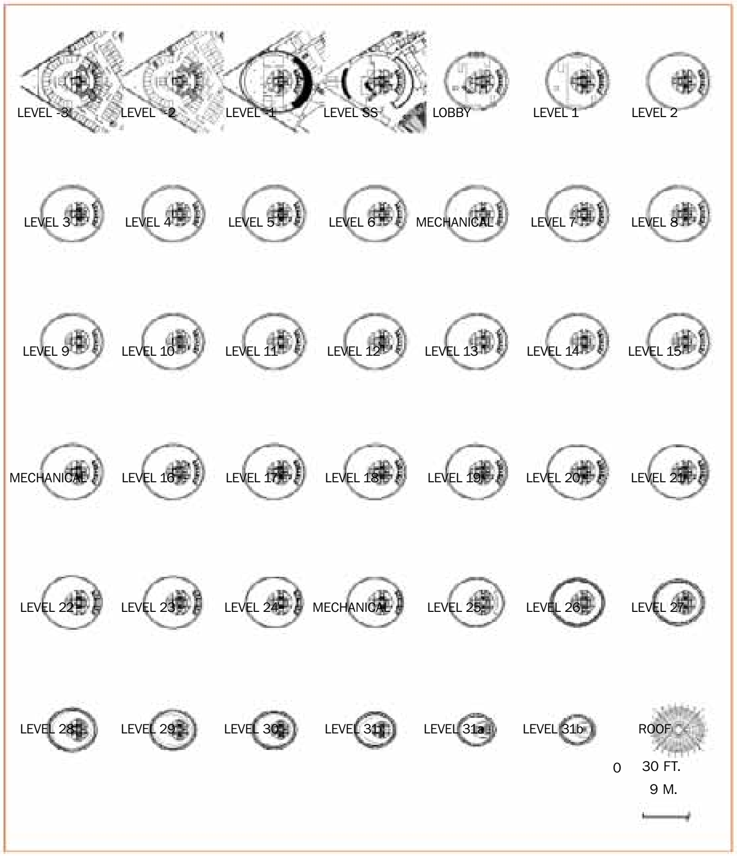
TYPICAL FLOOR


LEVEL -3
LEVEL -2
LEVEL -1
LEVEL SS
LOBBY
LEVEL 1
LEVEL 2
LEVEL 3
LEVEL 4
LEVEL 5
LEVEL 6
MECHANICAL
LEVEL 7
LEVEL 8
LEVEL 9
LEVEL 10
LEVEL 11
LEVEL 12
LEVEL 13
LEVEL 14
LEVEL 15
MECHANICAL
LEVEL 16
LEVEL 17
LEVEL 18
LEVEL 19
LEVEL 20
LEVEL 21
LEVEL 22
LEVEL 23
LEVEL 24
MECHANICAL
LEVEL 25
LEVEL 26
LEVEL 27
LEVEL 28
LEVEL 29
LEVEL 30
LEVEL 31
LEVEL 31a
LEVEL 31b
ROOF
0
30 FT.
9 M.

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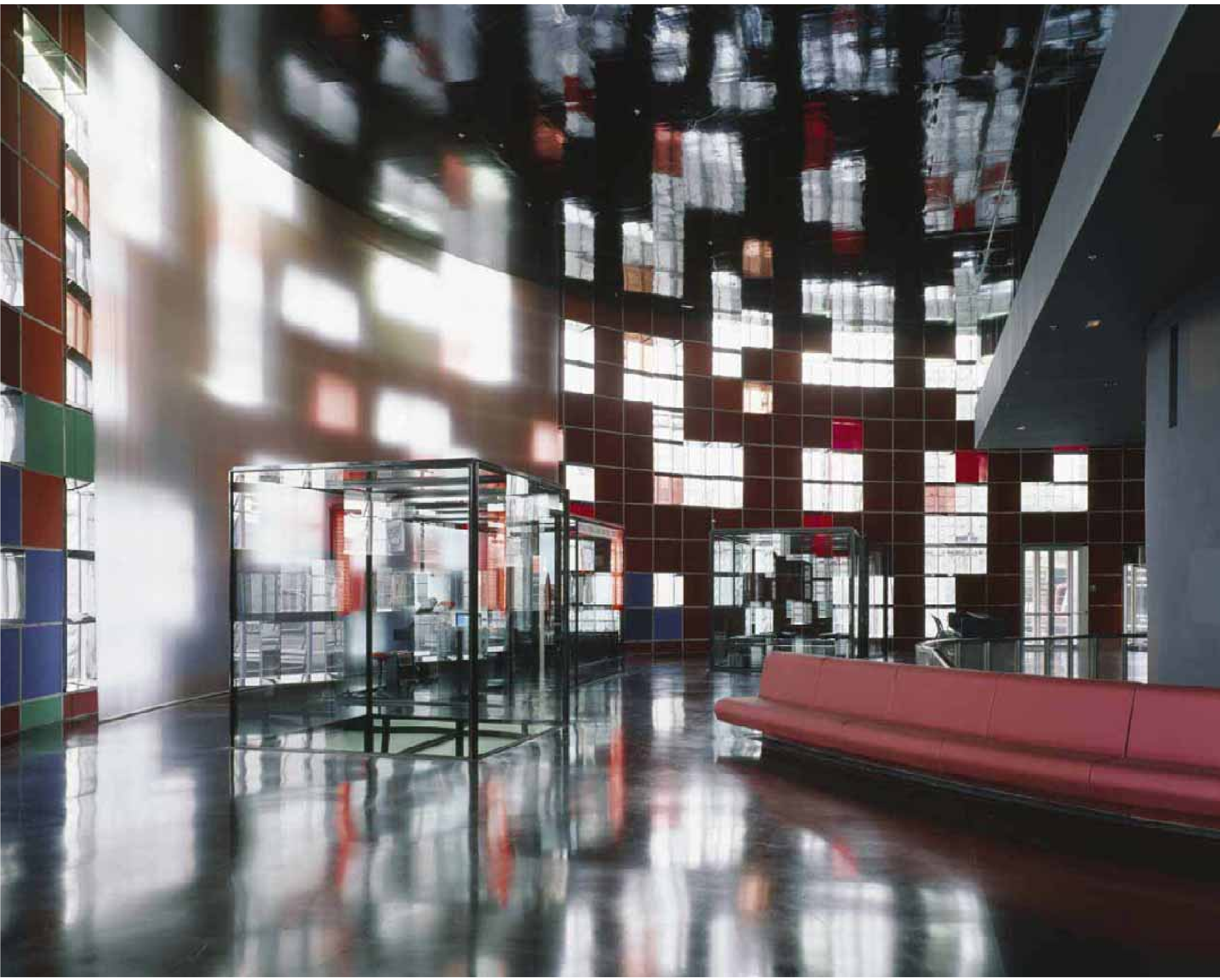
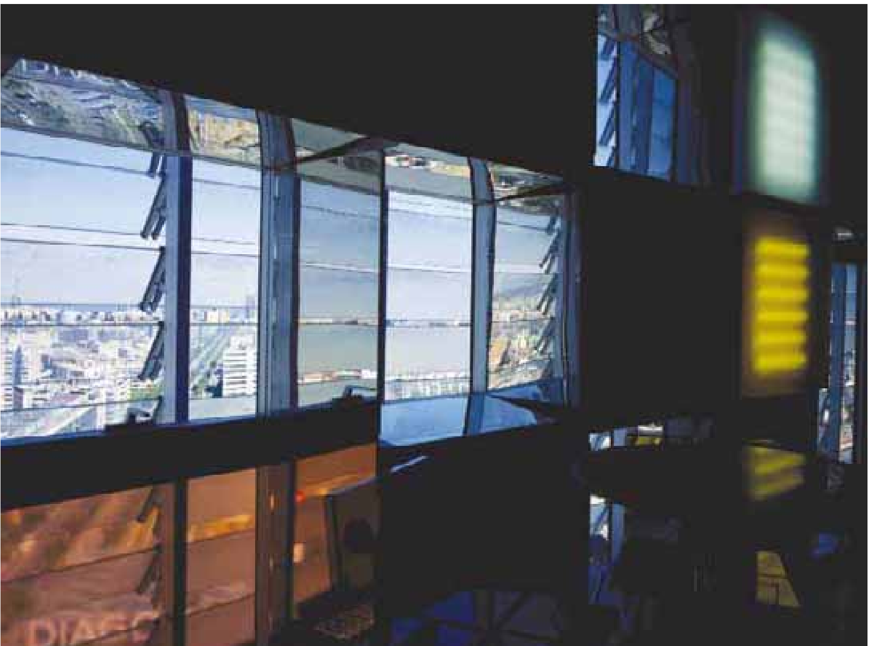




The shadowy lobby (above), with its reflective ceiling and floor, feels like a cool, fretworked arcade updated from the Alhambra. Windows lined in polished metal (left) diffuse light to reduce silhouetting.

uidity. The lobby previews the unique lighting effects inside with its long, high walls dotted with windows like a screen of flowing pixels. The visitor may be tempted to parse the contemporary cuneiform text they seem to form.

A modern-day bearing-wall tower

The concrete bearing wall, tapering from 19-inches thick at the base to just under a foot thick at the top, is a key element of a unique structural solution that maximizes clear-span space across the typical 10,800-square-foot floors. The concrete-framed stair and services core is offset rather than placed in the middle of the floor. Steel beams span from core to exterior wall to gain a column-free space that is both deep and broad. No one sits far from the window-wall, however, thanks to the oval plan. That is why the design can devote a chunk of the exterior to the main bank of elevators. Nouvel didn't let the window layout be dictated

Reflective ceilings (with coffers toned a warm champagne) gently diffuse the sharp daylight, which is also limpidly filtered through the milky patterned glass of partitions (top and middle). A masonry stair down from the lobby evokes the dark moat into which the tower visually disappears (bottom).

by conventional concerns about carrying structural loads in a direct path downward. Instead, steel reinforcing braces embedded in the concrete carry the loads around windows as needed.

By American standards, the layout is both counterintuitive and inefficient. Rectangular floor plates with a central core offer a theoretically higher proportion of usable space. Central cores, though, require a surrounding racetrack of wasteful circulation. They impede the easy communication of a layout that groups everyone together, as Agbar's floors do.

Both the shading of the louvers and the thickness of the wall cut the blinding Mediterranean light. The wall offers fewer openings and more heavily fitted louvers on the surfaces that receive maximum solar exposure, and more openings and less fritting where sun entry would be rare. Each floor frames a clear view to the Sagrada Familia.

A mutually reinforcing unity of structure and envelope

Bouanha plays down any notion that the Agbar is a "green" tower. Nouvel, in a statement about the design, writes only of querying the materiality of architecture, of creating a "paradox of weight and fragility." Yet the shading devices, the attention to orientation, and the use of the thermal mass of concrete to absorb solar heat, are all energy-reduction tactics well-attuned to sunny, generally dry climates.

This apparently mutually reinforcing unity of program, structure, and envelope has been a long time coming. You can see the offset core, the external elevators, and the diaphanous envelope in Nouvel's Tour sans Fin project of 1990. This project for Paris, regrettably unbuilt, remains an insightful and innovative skyscraper design more than a decade and a half after it was proposed. Our era's more prolific tower innovator, Norman Foster, was able to incorporate shaftlike, multilevel light wells (an idea Nouvel showed in the Tour sans Fin) in London's 30 St. Mary Axe [RECORD, June 2004, page 218], which resembles Agbar in its phallic shape. But the way the light wells chop up the floor plate of the London tower may prove too inflexible over time. And Foster's skin has an off-putting opacity very much in contrast to Agbar. (Agbar, it must be said, crashes into its plaza with considerably less delicacy than the inwardly tapering base Foster's team devised.)

When Nouvel describes this tower using such terms as "l'aventure de l'evanescence," you get the idea that the design focus is almost purely aesthetic—an odd choice if you consider skyscraper history as largely a march toward the most efficient means of placing more people on less property. The arbitrary aspects (like the window placement) suggest Nouvel is operating outside the usual cost-driven norms—as indeed he is by American standards. He realized that the look is part of the sell (in Barcelona's urban development terms), but the insightful integration of that Technicolor exterior with a brilliantly reimagined structure and plan may prove to be of lasting influence. ■

Sources

Exterior cladding, curtain wall: *Fractal; Permasteelisa*

Windows: *Technal; St. Gobain (glass)*

Skylights: *Colt*

Aluminum: *Hydro*

Entrances, doors: *Dorma; Fichet*

Hardware: *Dorma*

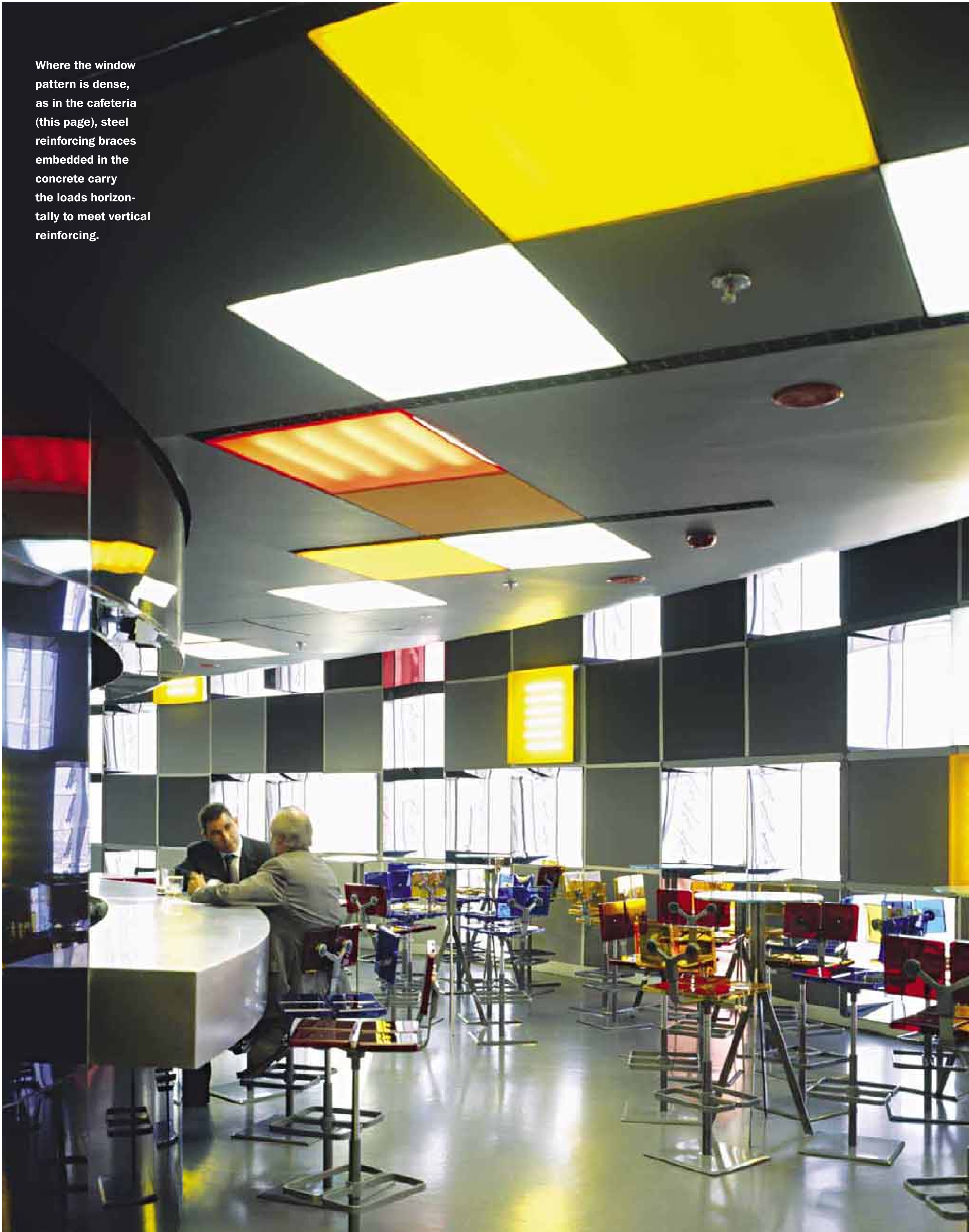
Acoustical ceilings: *Erco*

Tiles: *Pavimentos Mata*

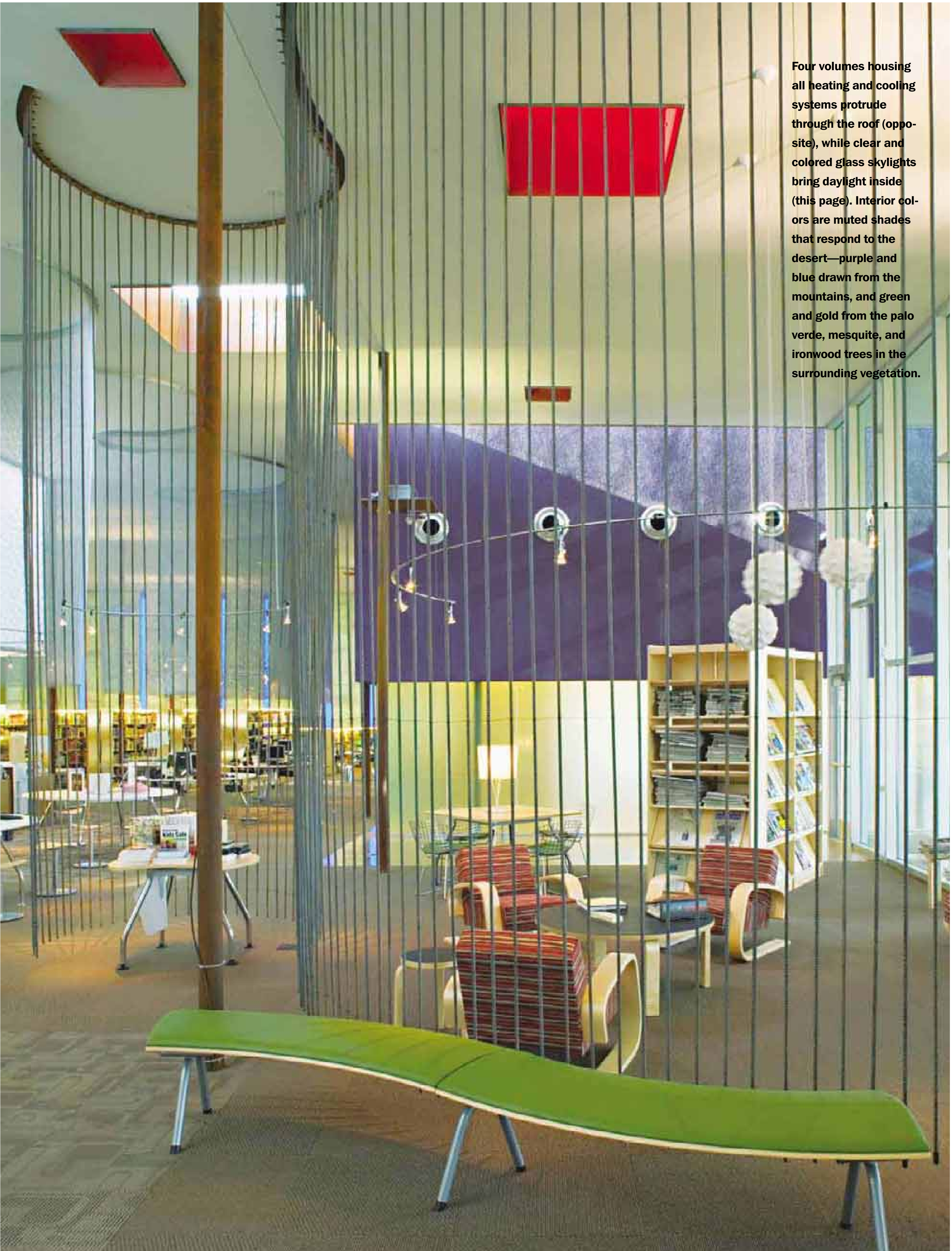
Paint: *Tollins (interior concrete)*

For more information on this project, go to Projects at **www.archrecord.com**.

PHOTOGRAPHY: © PHILIPPE RUALT (MIDDLE)



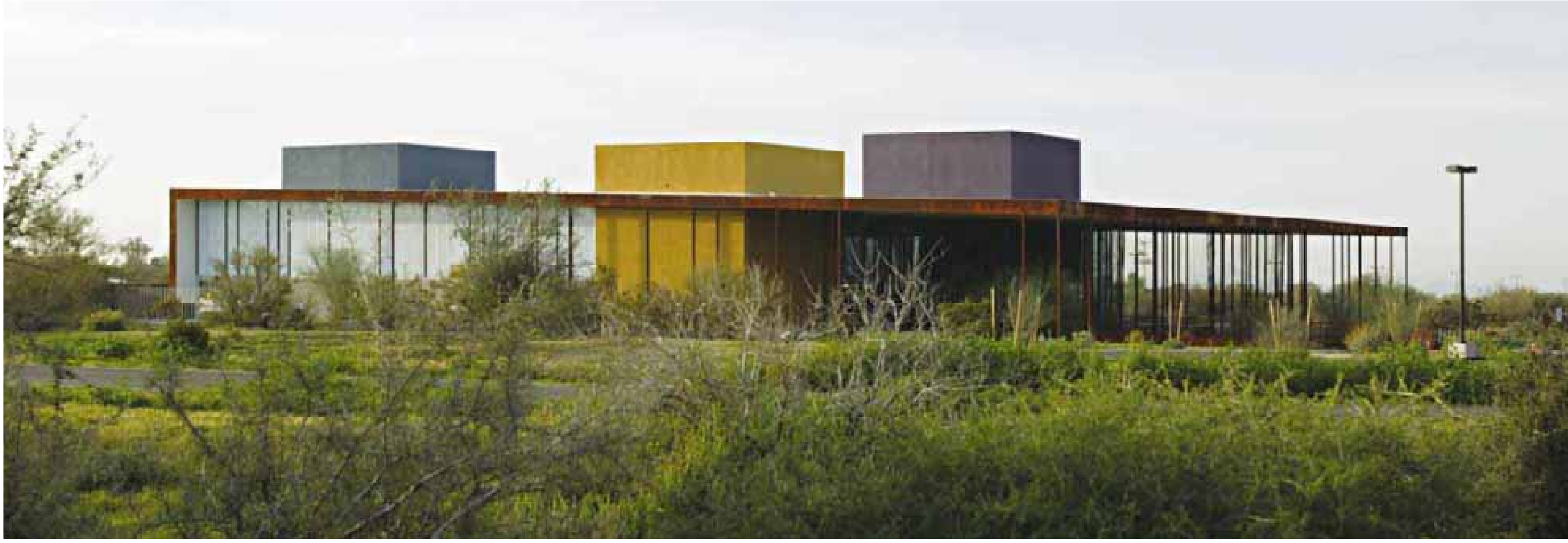
Where the window pattern is dense, as in the cafeteria (this page), steel reinforcing braces embedded in the concrete carry the loads horizontally to meet vertical reinforcing.



Four volumes housing all heating and cooling systems protrude through the roof (opposite), while clear and colored glass skylights bring daylight inside (this page). Interior colors are muted shades that respond to the desert—purple and blue drawn from the mountains, and green and gold from the palo verde, mesquite, and ironwood trees in the surrounding vegetation.

PHOTOGRAPHY: COURTESY RICHÄRD+BAUER, BY BILL TIMMERMAN

Richärd+Bauer designed the new **DESERT BROOM LIBRARY** in Phoenix as a nurturing presence on an untamed site



By Ingrid Spencer

Whether the result of Will Bruder setting a new standard for library design with his 1995 flagship Phoenix Central Library, the city's 2001 move to make the Phoenix Public Library (PPL) a separate city department, or the rainmaking by Toni Garvey, the city's dynamo of a head librarian, Phoenix continues to build libraries that break the mold and redefine the building type. With the completion of the 15,000-square-foot Desert Broom Library, in north Phoenix, Richärd+Bauer takes the concept of redefinition to another level, creating a striking yet harmonious addition to the desert landscape, clad in weathered steel.

Phoenix, the nation's sixth-largest city, with a population of nearly 1.5 million, has given the PPL, with its 14 public libraries, the freedom and support it needs to create its identity with new services, new branches, and a new attitude about library design. "Cities can go in one direction or another with libraries," says Garvey. "They can go with a cookie-cutter, or they can create libraries that make a statement."

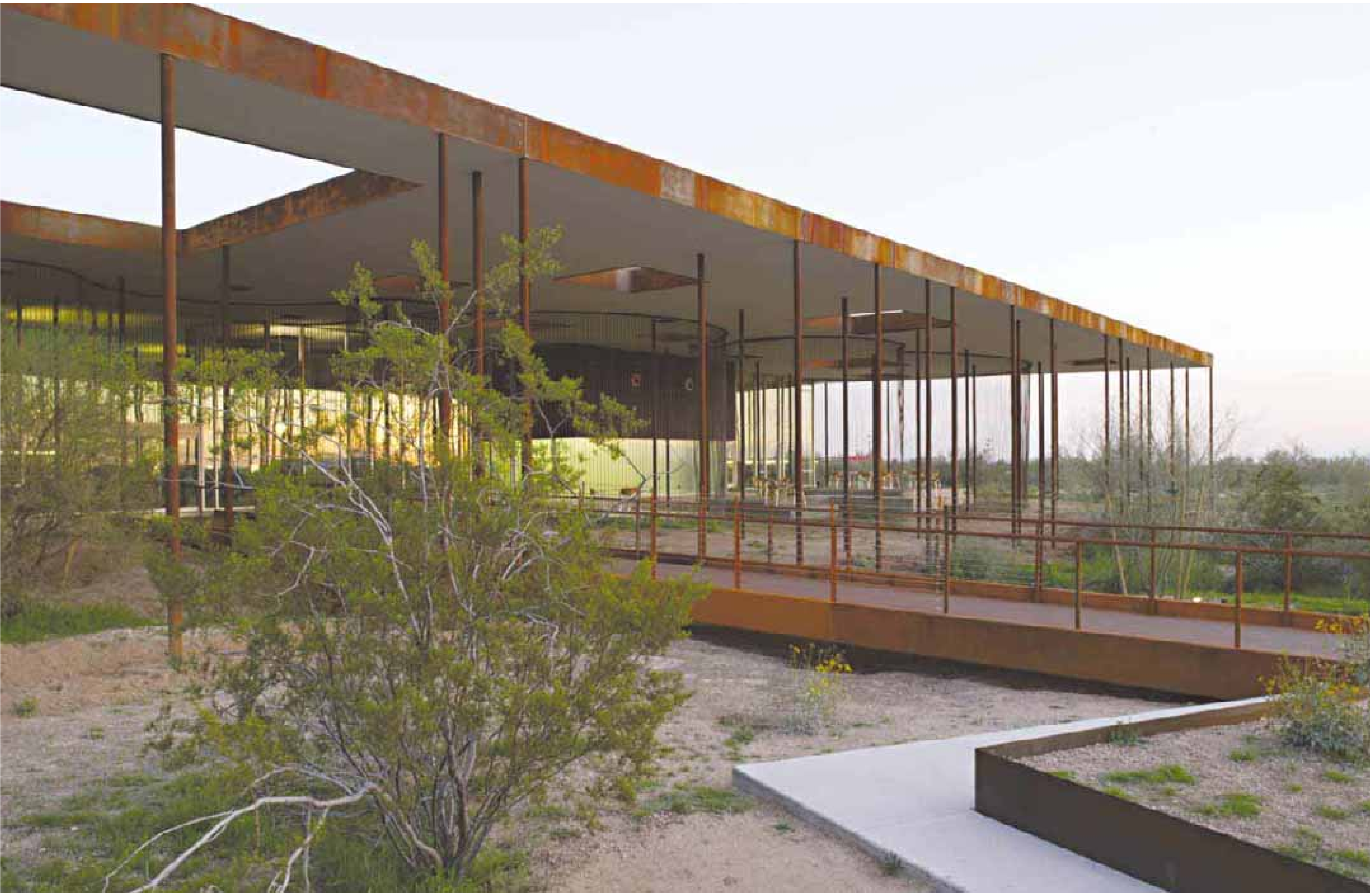
Richärd+Bauer had worked on several libraries within Phoenix and nearby Scottsdale, including a renovation of a Bruder-designed branch. Its latest project, which includes a park, was a chance for the firm to create a destination that would qualify for LEED Silver status, sit gently on the virgin desert landscape of its 45-acre site, and stand out without imposing on the land. "Communities are erasing the desert," says principal Jim Richärd, AIA. "We wanted to build responsibly. Also, in this kind of site, little cornices don't mean anything. You need big gestures."

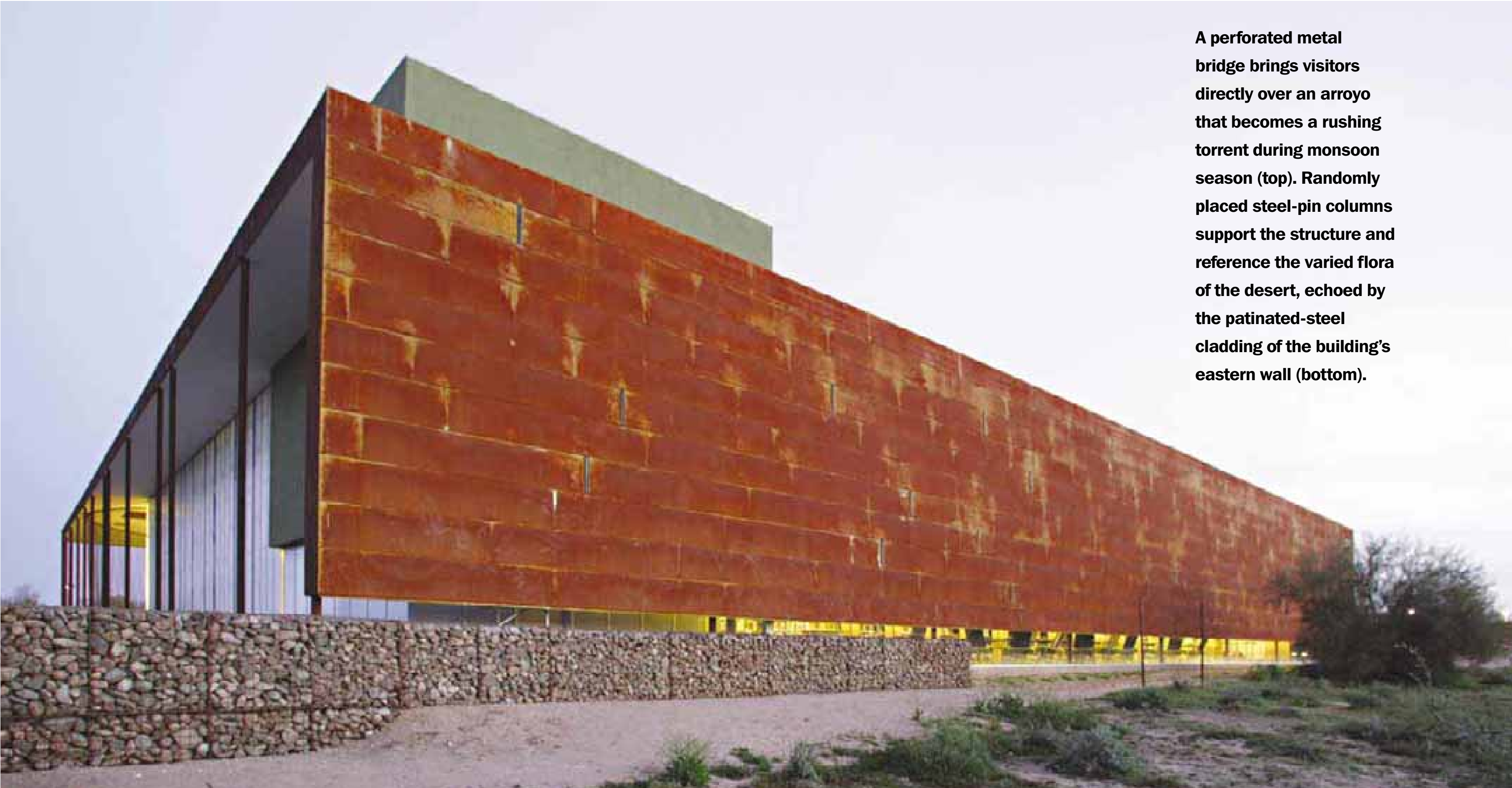
For Richärd, building in the arid Sonoran Desert meant preserving the authenticity of what was there. Desert Broom's site, with its braided streams, arroyos, and abundance of wild brush and saguaros, offered a metaphor that gave the project direction. A young saguaro needs the shade and nutrients provided by an older, stronger tree or shrub, and the design of the library embraces the metaphor physically—the library's 25,000-square-foot roof extends 60 feet from the building, to shade visitors and provide comfortable outdoor spaces—and philosophically. "Libraries nurture intellectual growth," says Richärd. "We took that concept a few steps further."

The brain nourishment begins before you even get to the front door of Desert Broom. The building and parking lot are nestled in desert wilderness, and visitors approach the entrance from the northwest, crossing over an arroyo on a perforated-metal bridge. Immediately, the right angles of the building are contradicted by a random pattern of slender, 4-inch-diameter steel columns that continue throughout the building and

Ingrid Spencer is a contributing editor and former managing editor of ARCHITECTURAL RECORD. *She writes about design from her home base in Austin, Texas.*

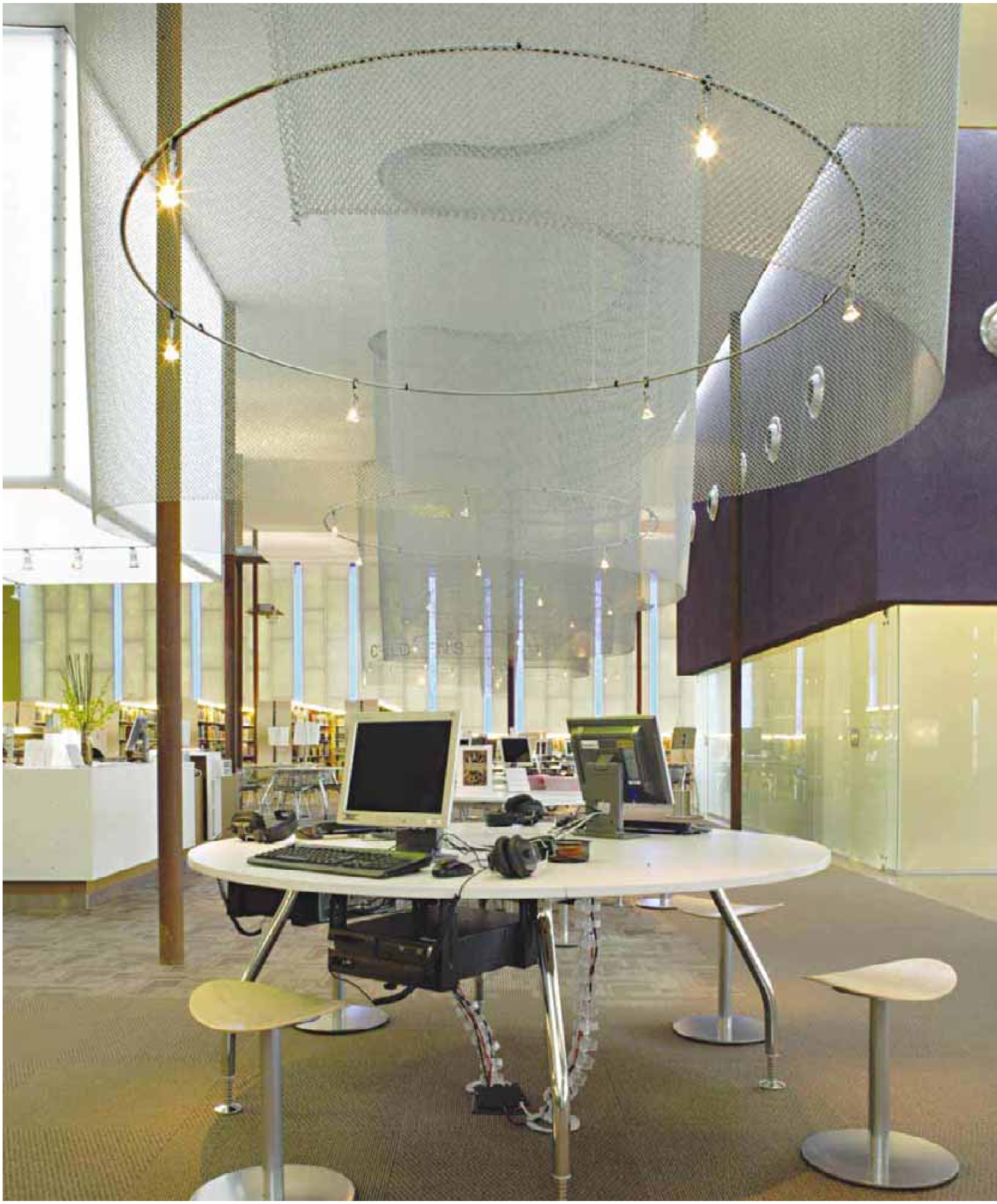
Project: *Desert Broom Library, Phoenix, Arizona*
Architect: *Richärd+Bauer—Jim Richärd, AIA, principal; Steve Kennedy, AIA, Erik Koss, project architects*
Interior designers: *Kelly Bauer; Stacey Kranz*
Engineer: *KPFF (civil and structural)*
Landscape consultant: *E-Group*
General contractor: *Linthicum Constructors*



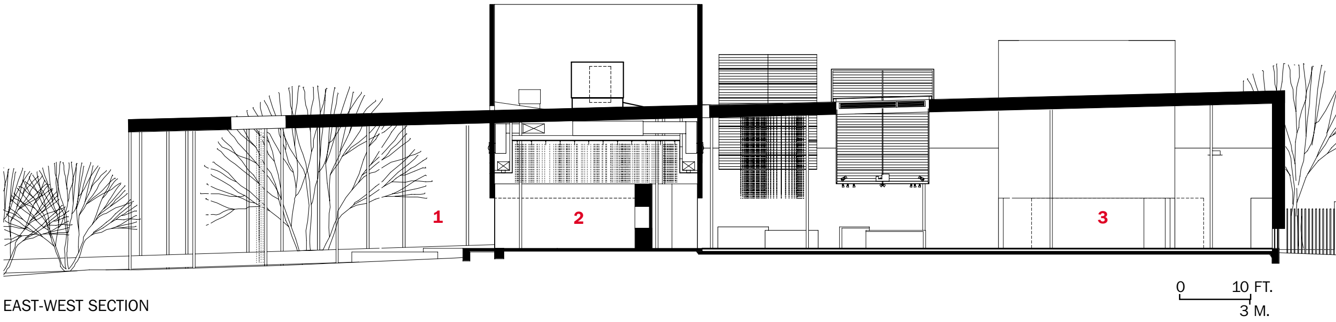


A perforated metal bridge brings visitors directly over an arroyo that becomes a rushing torrent during monsoon season (top). Randomly placed steel-pin columns support the structure and reference the varied flora of the desert, echoed by the patinated-steel cladding of the building's eastern wall (bottom).

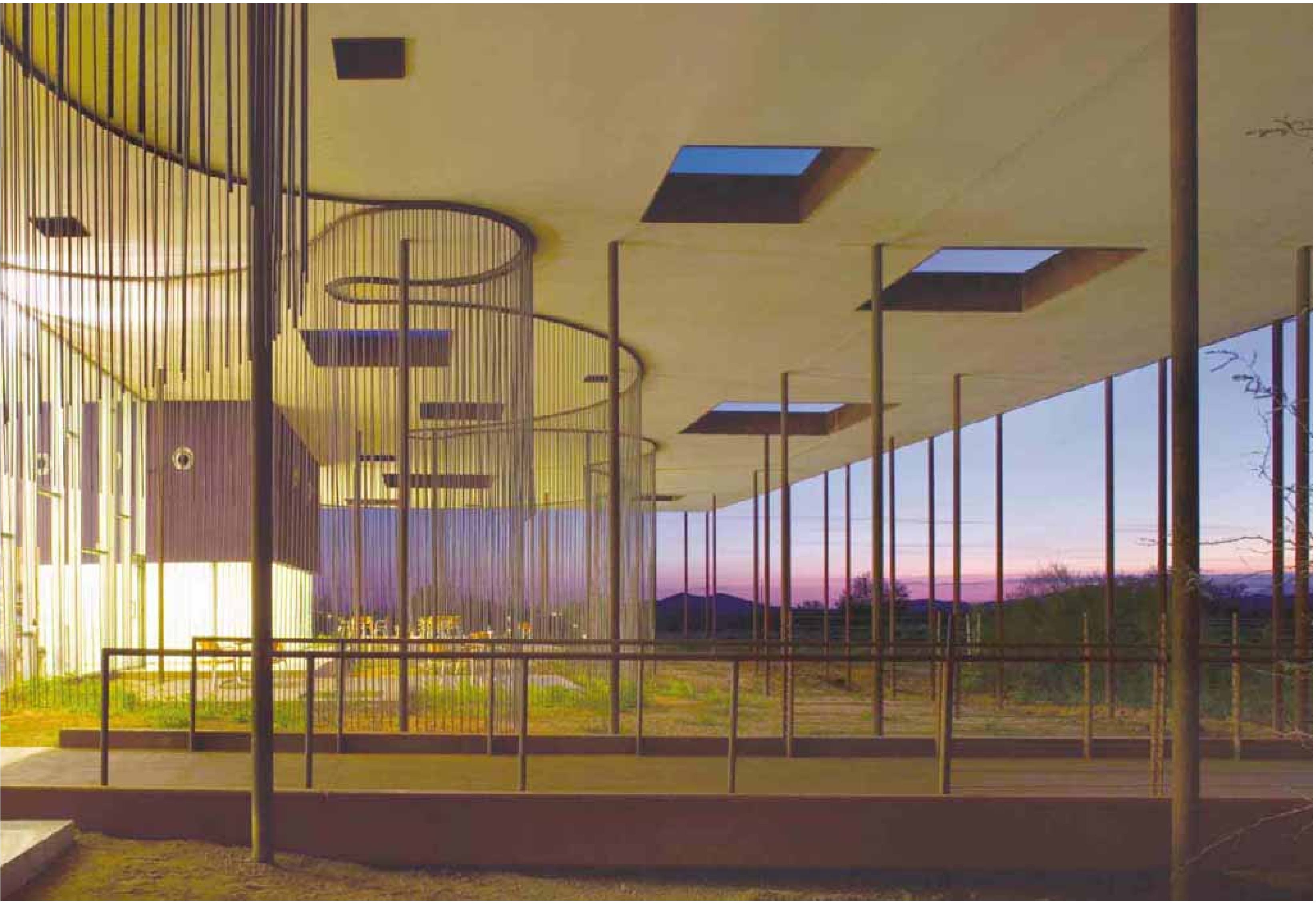
Materials are honest and sustainable throughout, as in the information desk (left in photo, right) that is made of recycled soft-drink bottles. Also made of recycled materials are the removable carpet tiles throughout the space, which allow for flexible computer plug-in stations.

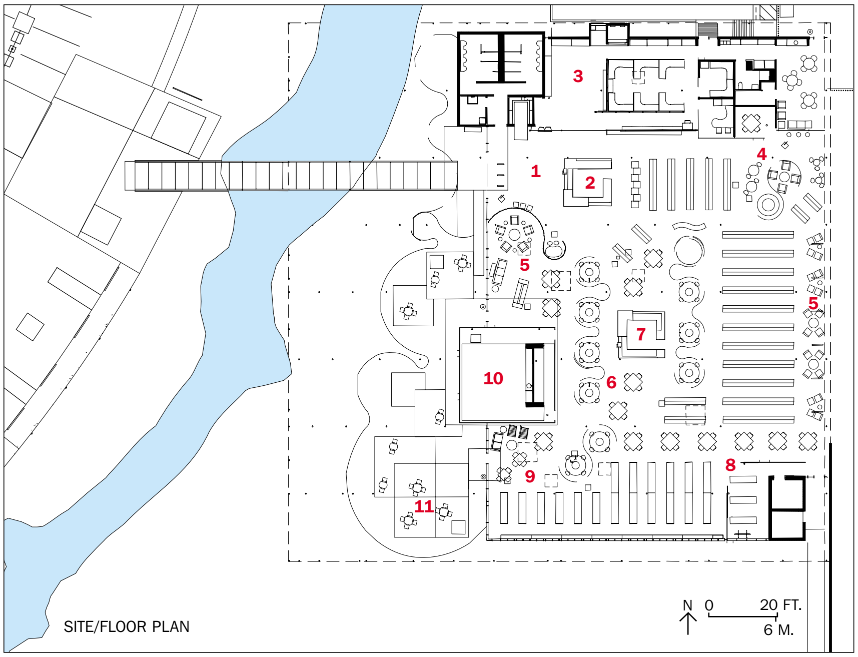


1. *Reading terrace*
2. *Meeting*
3. *Stacks*



EAST-WEST SECTION

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5
7
10
6
9
8
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SITE/FLOOR PLAN
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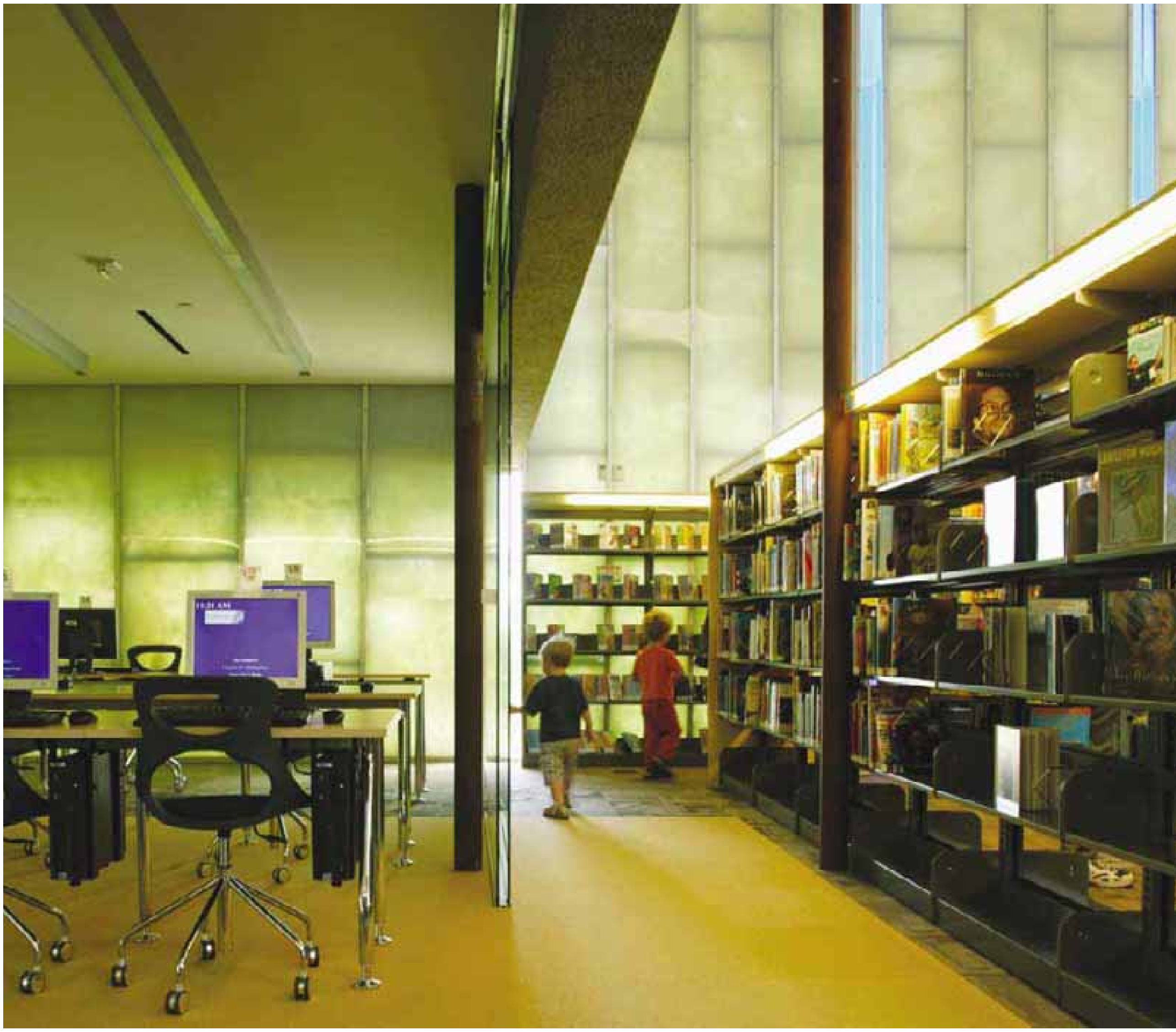
6 M.

1. *Lobby*
2. *Service desk*
3. *Staff*
4. *Teens*
5. *Lounge*
6. *Computer resources*
7. *Information desk*
8. *Computer training*
9. *Children*
10. *Meeting*
11. *Garden terrace*

Wavy screens of rebar keep critters out of outdoor reading spaces, which are positioned for maximum viewing of the spectacular desert sunsets (opposite). Inside, a temporary wall of glowing polycarbonate panels allows daylight in the stacks area and eliminates the need for harsh overhead lighting (right).



support the overhanging roof.

Looking surprisingly delicate, strands of metal rebar stand in curtainlike waves under the roof's great overhang, defining the library's outdoor spaces without totally enclosing them. In other places, a series of openings penetrate the roof, allowing light to come through, unfiltered outside and distilled through colored and clear glass inside. Indoors, the architects echoed the rebar waves with undulating screens of metal mesh, delineating certain areas, such as a lounge and computer-resource tables.

"Libraries are not 'shush' places anymore," says Garvey. "They are destinations, places where people can get together to communicate." Richärd agrees. "Libraries compete with bookstores now. We're building coffee bars into them, and teen-only sections."

While Desert Broom doesn't have a café, it does have shelves loaded with enough multiple copies of recently released DVDs to put the local Blockbuster to shame; self-checkout areas; a meeting room sectioned off with frosted glass; staff and computer training areas; a teen section with listening stations for audio CDs; and reproductions of classic Midcentury Modern furniture scattered about for those visitors who actually came for the plentiful supply of books or magazines.

Those who do come to read will do it in comfort—without a smidgen of harsh overhead lighting. Instead, skylights provide daylight, as do low windows, which keep out the harsh midday sun and allow views of the rustic landscape. Custom-made stacks have their own fluorescent lights built in. Other comforts include high-efficiency mechanical units for HVAC, enclosed in the tops of each of four colored cubes protruding from the roof. Heated or cooled air moves directly into the open space from each one of these volumes, eliminating the need for overhead ductwork. In the outside seating areas, where dramatic sunsets can be seen when the closing time permits, building relief air (which is usually thrown out the top of the units on the roof) heats and cools the space.

While the southeast wall of the building is clad in Cor-Ten steel panels patinated to a rusty brown, the southwest wall of the library—in anticipation of expansion—features a double layer of polycarbonate panels with cotton insulation stuffed in between. Daylight seeps through the translucent panels and renders the wall a glowing conclusion to the space.

"The building is like a found object in the desert," says Richärd, who is also a pilot, and has surveyed the area from above. The community's response has been strong. Using cars, not planes, more than 2,000 people found the library on its opening day, and the PPL is already on to the next phase, planning more branches and renovations. "Libraries are about possibilities, and change," says Garvey. "We're keeping up." ■

Sources

Structural Steel: *Maricopa Metals*

Curtain wall: *Elwary Construction (steel wall panels); Mirror Works (glazed aluminum, polycarbonate)*

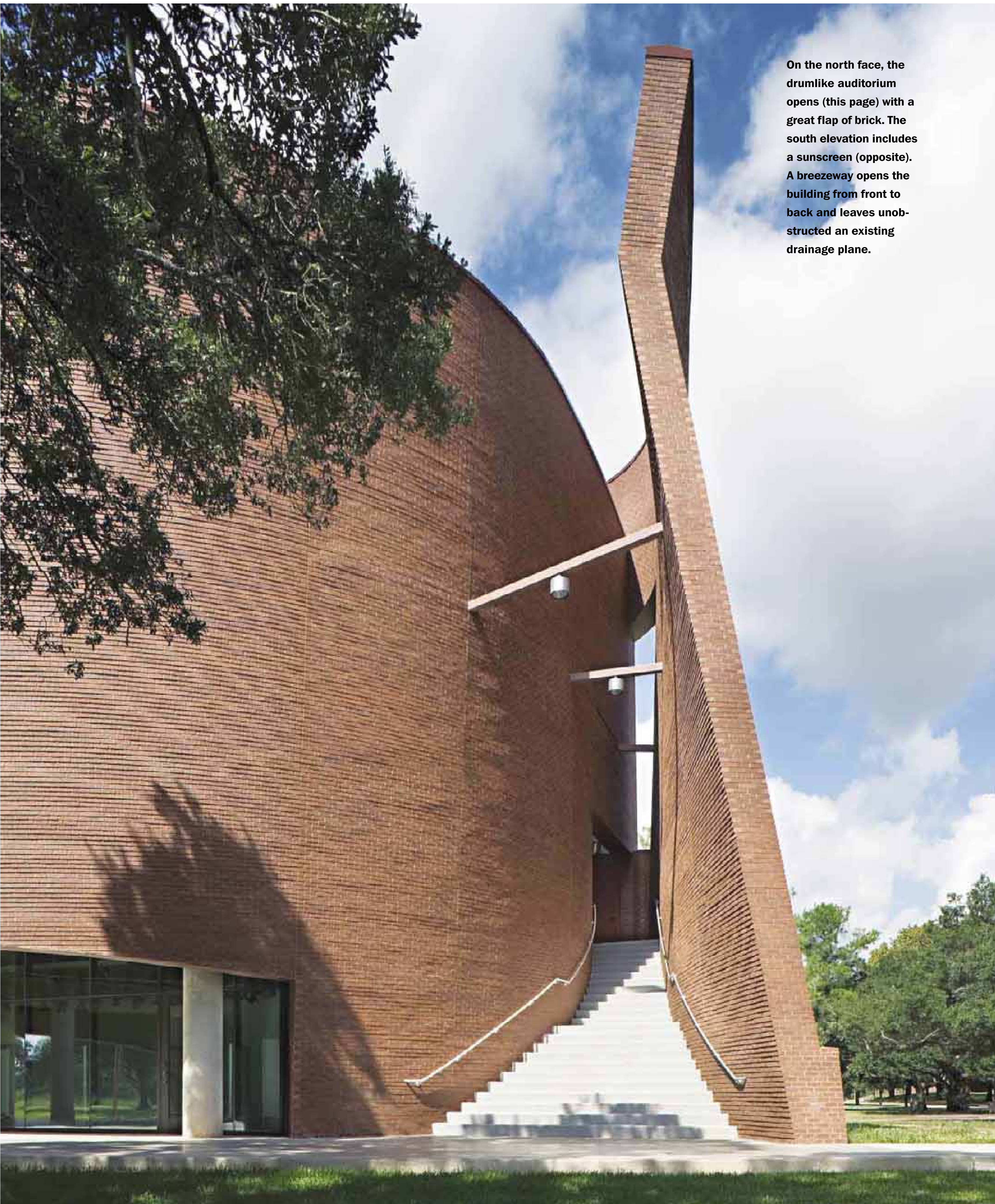
Plastic laminate: *Nevamar*

Flooring: *Econights; Crossville; Shaw (carpet tile); InterfaceAR*

End panels: *Polygal*

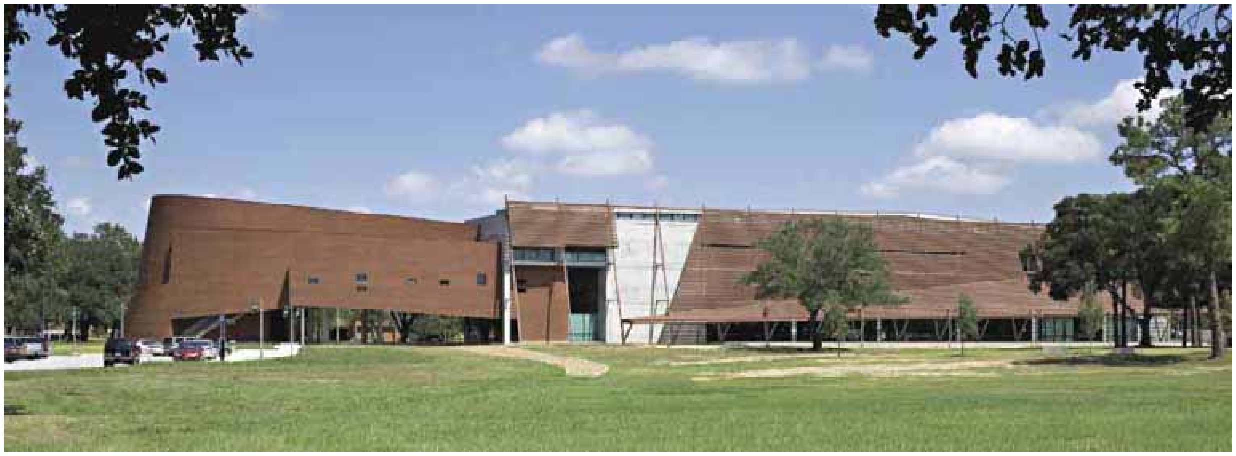
Lighting: *Tech Lighting; Erco; Delta Light; SporLight; Se'Lux; Bartco; Abolight; Lithonia*

For more information on this project, go to Projects at **www.archrecord.com**.



On the north face, the drumlike auditorium opens (this page) with a great flap of brick. The south elevation includes a sunscreen (opposite). A breezeway opens the building from front to back and leaves unobstructed an existing drainage plane.

Teaching by example, ROTO raises brickwork to imaginative new levels with the ARCHITECTURE AND ART BUILDING at Prairie View A&M in Texas



PHOTOGRAPHY: © ASSASSI, EXCEPT AS NOTED

By Sarah Amelar

"At first, we were afraid to ask the brick what it wanted to be," says Michael Rotondi, FAIA, of his design for the Architecture and Art Building at Texas's Prairie View A&M University. "What if it still wanted to be an arch? But then the answer came: It wanted to dance." So, Rotondi; his partner, Clark Stevens, AIA; and their firm, Roto, experimented with the material, creating a sheathing, with great rhythmic pleats and gaping flaps, that billows like a huge, windblown garment.

Brick was a given, mandated by the campus planning guidelines. But Rotondi, a seasoned educator, who had headed the Southern California Institute of Architecture (SCI-Arc) for a decade, saw this requirement—and the entire project—as an opportunity to challenge the conventions of materials and spark the imaginations of architecture students.

In interviewing for the commission, Rotondi told Ikhlas Sabouni, Prairie View's dean of architecture, that he was ready to "download 30 years of experience as an architect and educator." He proposed not only to review the curriculum, but also teach the students, as part of the design process. With the search committee's approval, Sabouni soon signed on, dedicated, as she puts it, to finding "an architect of national renown, who'd create a laboratory for design, a beautiful structure that students could learn from."

Just as Rotondi had been eager to embrace Native American culture when he built at Sinte Gleska University, on South Dakota's Rosebud Reservation [RECORD, November 1999, page 84], he hoped to gain an understanding of Prairie View's culture. Historically, this 130-year-old branch of Texas A&M University, sited 45 miles northwest of Houston, has had a predominantly African-American student body. In 2000, the school won a $190 million Office for Civil Rights settlement to compensate for long-term denial of adequate financial resources. The university allocated the funds for four new structures for the following disciplines: architecture (which shared a building with engineering), nursing, juvenile justice, and electrical engineering. In addition to the architecture school, with its 225 undergraduate and graduate students, Roto's $20 million, 108,000-square-foot building would house construction-science and community-development programs, as well as the Community Urban Rural Enhancement Service and the Texas Institute for the Preservation of History and Culture, with its focus on African-American contributions to the state.

Rotondi began interacting with the students through nonarchitectural, almost meditative exercises aimed, he says, at "heightening awareness, concentration, and focus," while opening windows to their subcultures. After getting his pupils to savor and describe the textures and unfolding flavors of "a fresh food item that a grandmother would prepare," he asked them to bring in a favorite piece of music. They diagrammed what they heard on 6-foot-long pages, tracing melodic lines and rhythmic structures, and relating the drawings back to the body's movement through space. "From gospel and rhythm and blues to bluegrass, all the music had roots in East or West Africa," the architect says. "So, right there, in those incremental rhythms and long melody lines, we found our building's ordering system."

Though Rotondi considered various partis, he settled on a long configuration with a central space and linear arrangement of studios—a diagram that had proved successful in SCI-Arc's latest incarnation. Prairie View initially offered him a site buried at the back of the campus, but Rotondi convinced the university president (a man committed to architecture as an educational tool) to place the building as a gateway to the school.

As realized (in conjunction with HKS), the three-story, 450-foot-long, concrete-framed structure presents its most eclectic face on its south, or entry, side. Here, a curving shell of brick wraps the cultural center, at the building's west end, while a brise-soleil of painted, perforated steel veils

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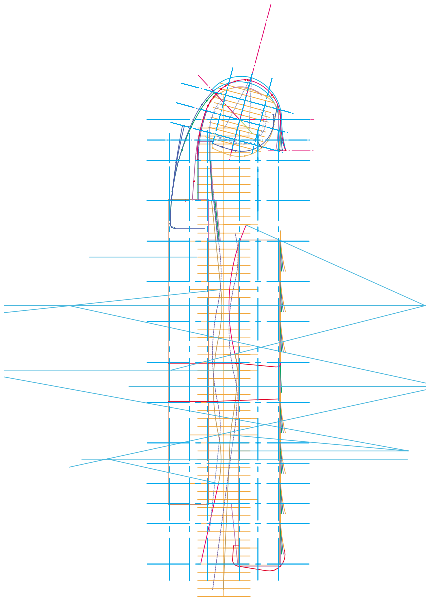
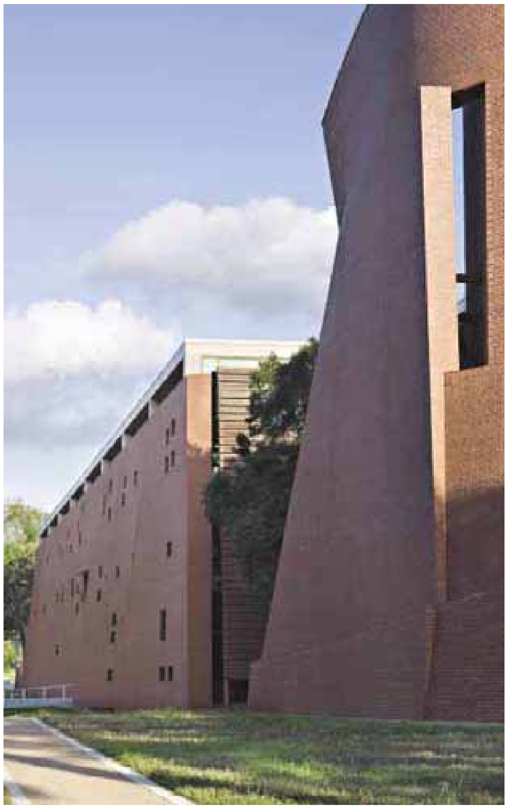
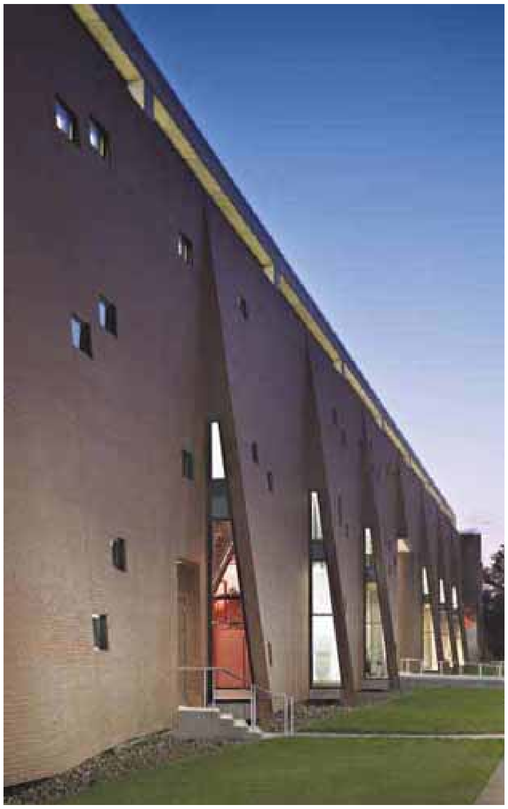
Project: *Architecture and Art Building, Prairie View A&M University, Prairie View, Texas*

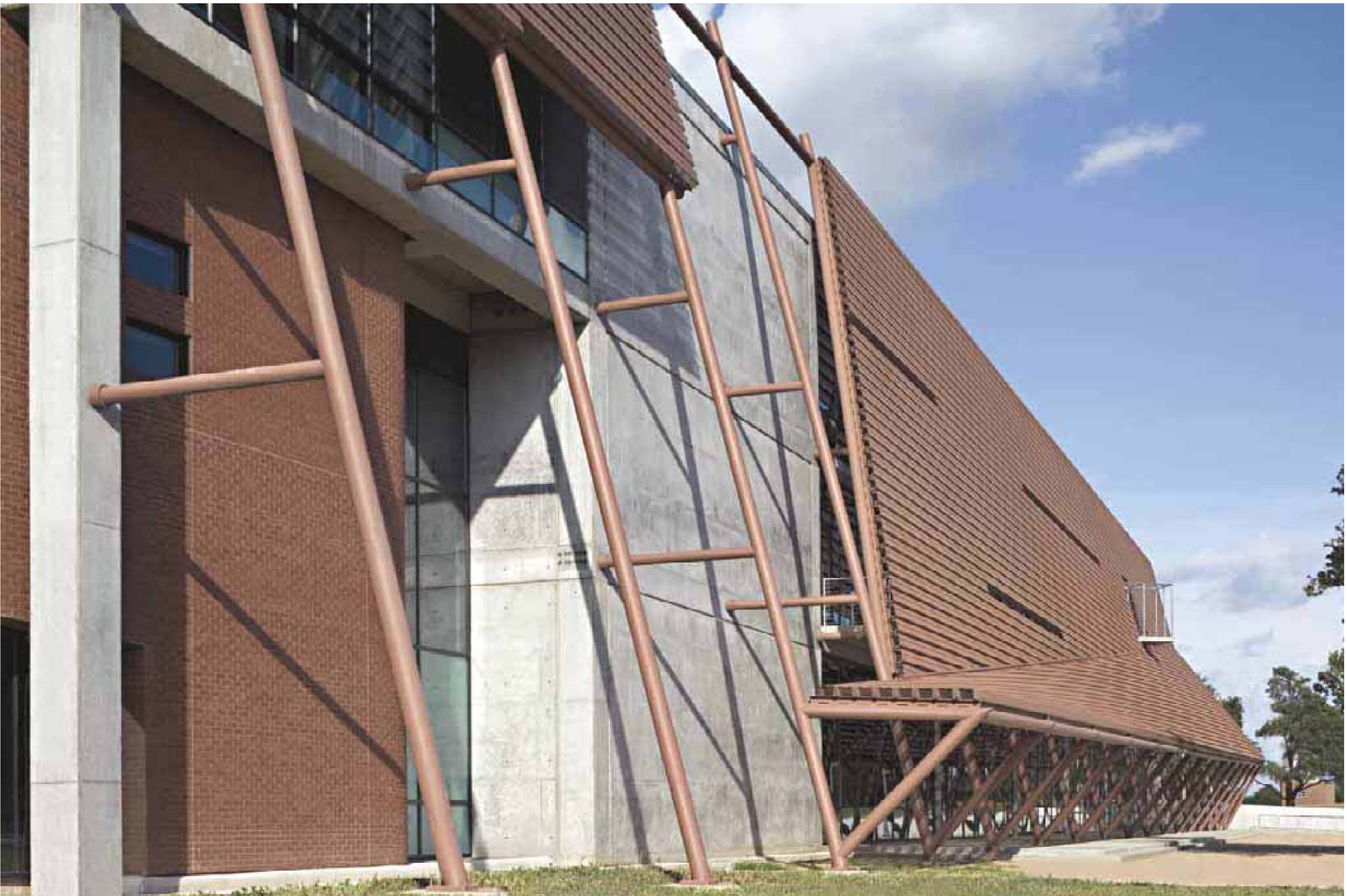
Architects: *Roto Architects—Michael Rotondi, FAIA, Clark Stevens, principals; Tom Perkins, project architect; Jim Basset, Alyssa Holmquist, Devin McConkey, Sergio Ortiz, Otoniel Solis, Jack Nyman, John Lessl; HKS—Jess Corrigan, AIA, principal*

A rhythmic diagram (below) shows the plan's ordering system. A live oak (near right) was preserved and integrated with the north elevation, which fans out like a skirt (far right). A sunscreen (bottom) veils south-facing studios.

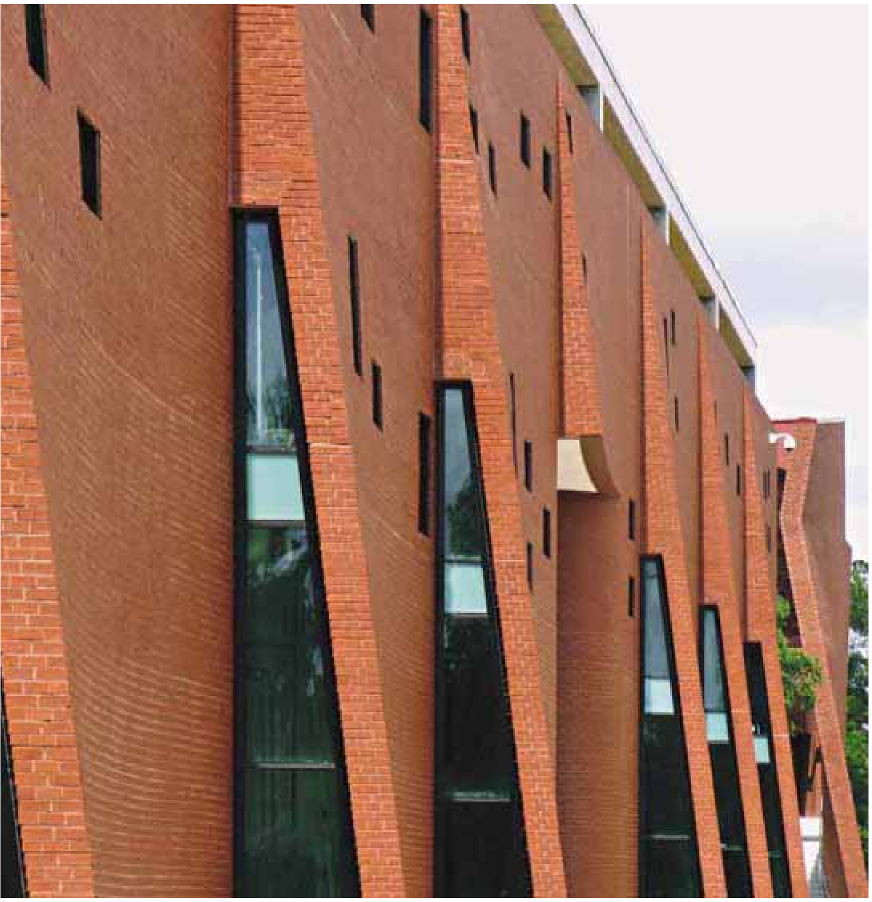


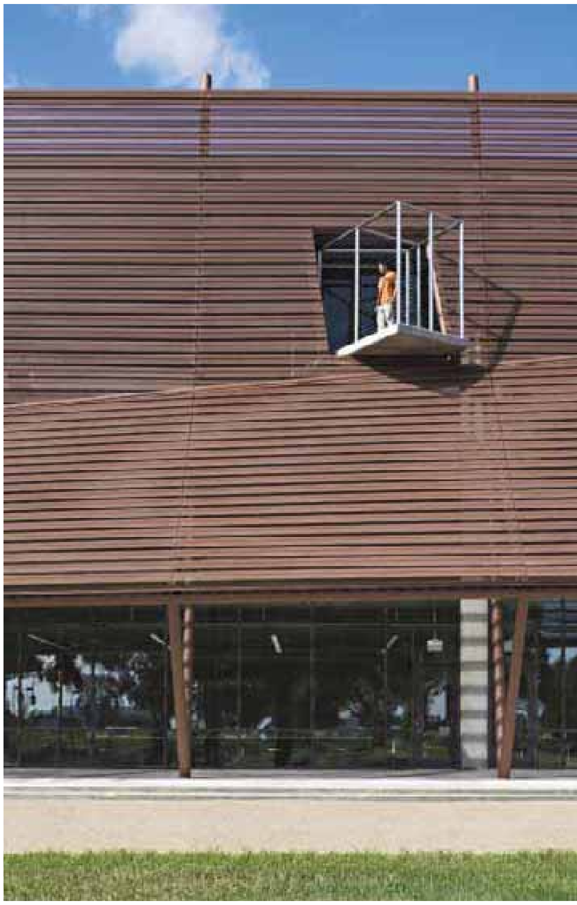




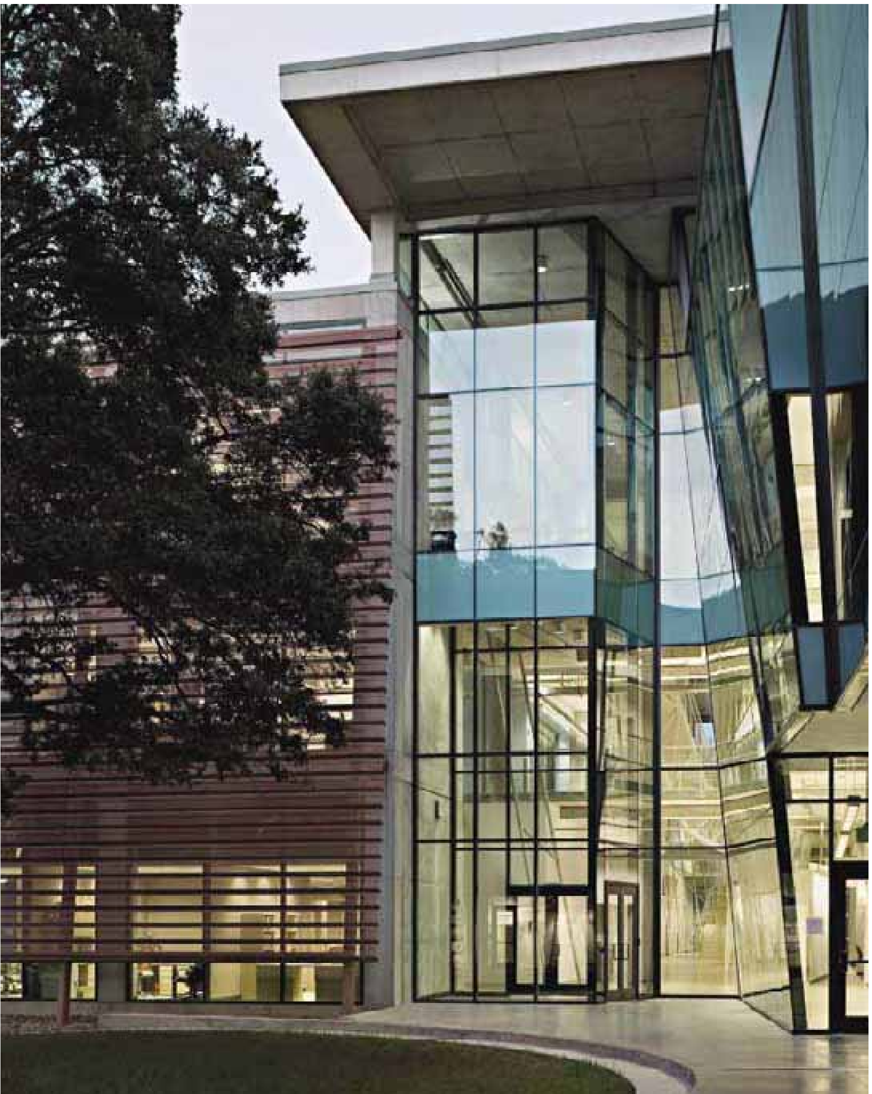


PHOTOGRAPHY: © DAVID GUTHRIE (OPPOSITE, TOP LEFT)





On the north elevation, small, punch-card apertures in the brick walls play against large, triangular windows in the perpendicular spaces between wall planes (left). The glazed north entrance forms pleats and folds around the existing live oak tree (below). A small balcony—or penalty box, as Dean Sabouni jokingly calls it—penetrates the brise-soleil, providing a break-out space from the architecture studios, while the art studios, on the ground floor, can open with glassy, roll-up garage doors (right).



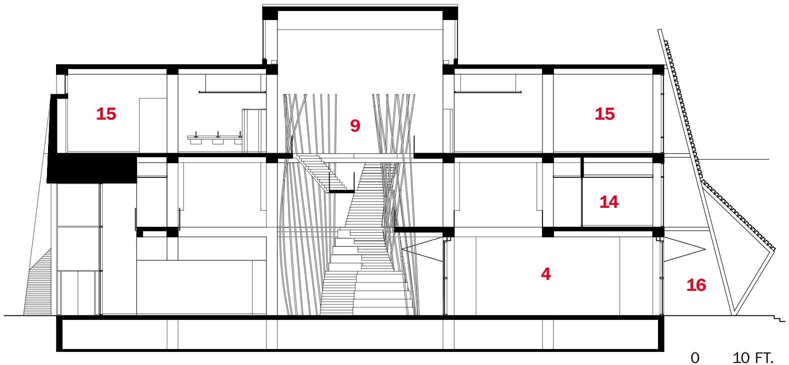
glazed architecture studios to the east. Though this elevation offers the project's most collaged and even disjointed composition, the contrasting materials and forms effectively distinguish among the functions within. And the sunscreen, dipping toward the ground, mediates between the prairie grasses in front of the building and the campus behind it, while alluding to a shady Southern front porch.

As if entering a truly lived-in home, students typically access the building not from its formal street approach, but from the back, or campus, side to the north, where an ancient oak tree commands an entry courtyard. Here, on the north face, the brickwork becomes extraordinary. Using old-fashioned, wire-cut clay bricks, instead of the more artificial-looking versions that clad the surrounding buildings, Roto inventively explored corbeling, displaying a jubilant range of possibilities in full view of the students. The skin, with mortar matching the deep orange bricks, wraps the cylindrical auditorium like taut fabric, flaring out toward the base. Like a monumental flap swaying in the breeze, a wall of brick opens from the drum, creating an interstitial space, where stairs spill out from the theater.

Farther down the long north elevation, a series of canted walls fan out beneath the roofline, creating in-between spaces for tall triangular windows perpendicular to the wall planes. Playing against these large openings, small punch-card apertures punctuate the planes of brick. If the battered masonry and little windows evoke a fortress, it is one transformed by an accessibly human scale and sense of whimsy. The inventiveness continues, for example, where the walls surge out at their bases, transforming the geometry as they undulate up to crisp, 90-degree angles at the top. Paradoxically, the brickwork expresses heft or solidity, but billows like a skirt.

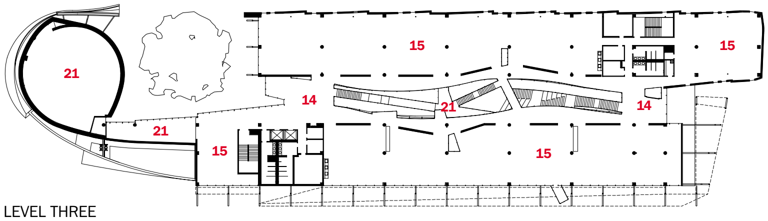
The craft of bricklaying, Rotondi says, was originally brought to this region by African-American slaves. At Prairie View, the architect encouraged his bricklayers to use traditional hand methods in new and creative ways, fine-tuning the corbels to enhance the walls' sculptural qualities.

For the interior, Roto produced a central circulation "canyon" that

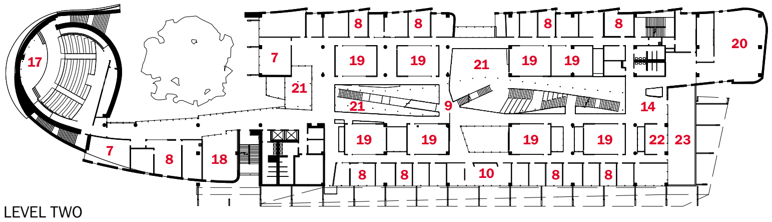


SECTION A-A

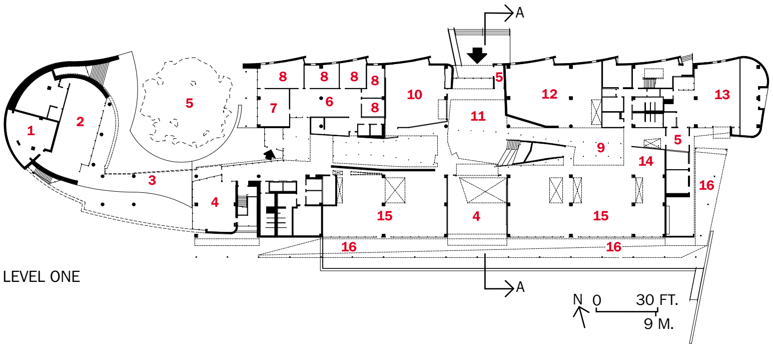
1. *Cultural archive*
2. *Cultural gallery*
3. *Breezeway*
4. *Gallery/pinup area*
5. *Existing oak tree*
6. *Administration*
7. *Conference*
8. *Office*
9. *"Canyon"*
10. *Lecture hall*
11. *"Main space"*
12. *Art studio*
13. *Wood/metal shop*
14. *Lounge*
15. *Architecture studio*
16. *"Porch"*
17. *Theater/lecture hall*
18. *Reference library*
19. *Classroom/seminar*
20. *Computer lab*
21. *Open to below*
22. *Café*
23. *Roof deck*



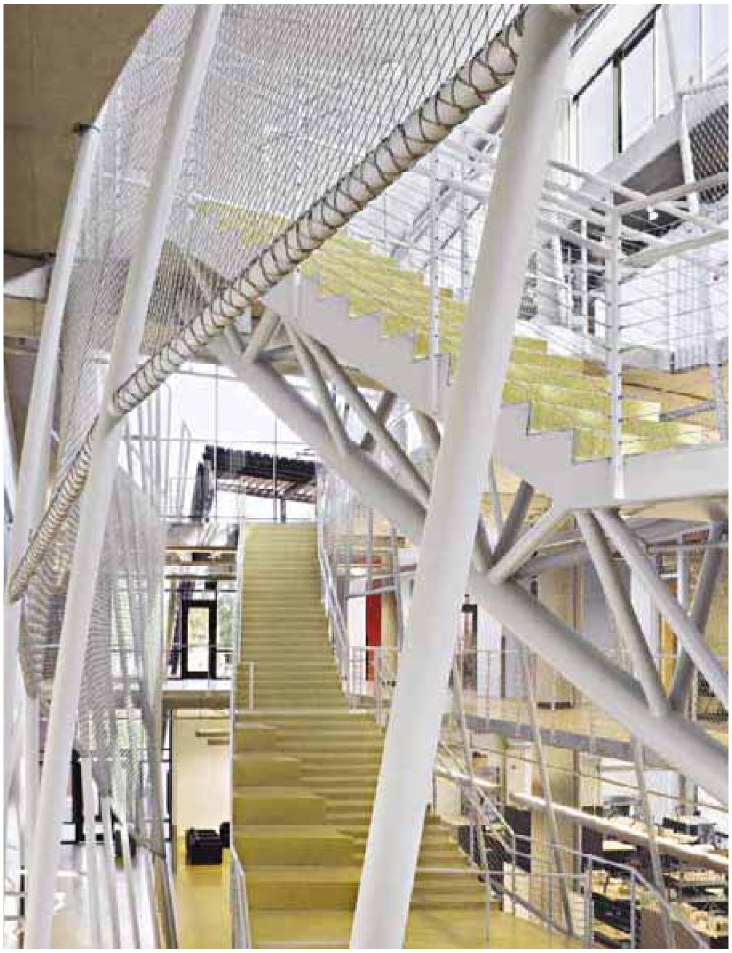
LEVEL THREE



LEVEL TWO



LEVEL ONE



extends up the building's three stories, providing an informal amphitheater and gallery/pinup space. This central zone is crossed by a web of catwalks, and stairs on tubular steel trusses that swoop like roller coasters. Scrims of steel cable net, resembling chain link, partially screen the area, not only defining a space within a space, but also producing moiré effects, animated by abundant daylight from the canyon's clerestory and end windows. Slender steel columns, supporting the slung steel net without reaching the ceiling, lean like casually planted wooden stakes, adding to the dynamism.

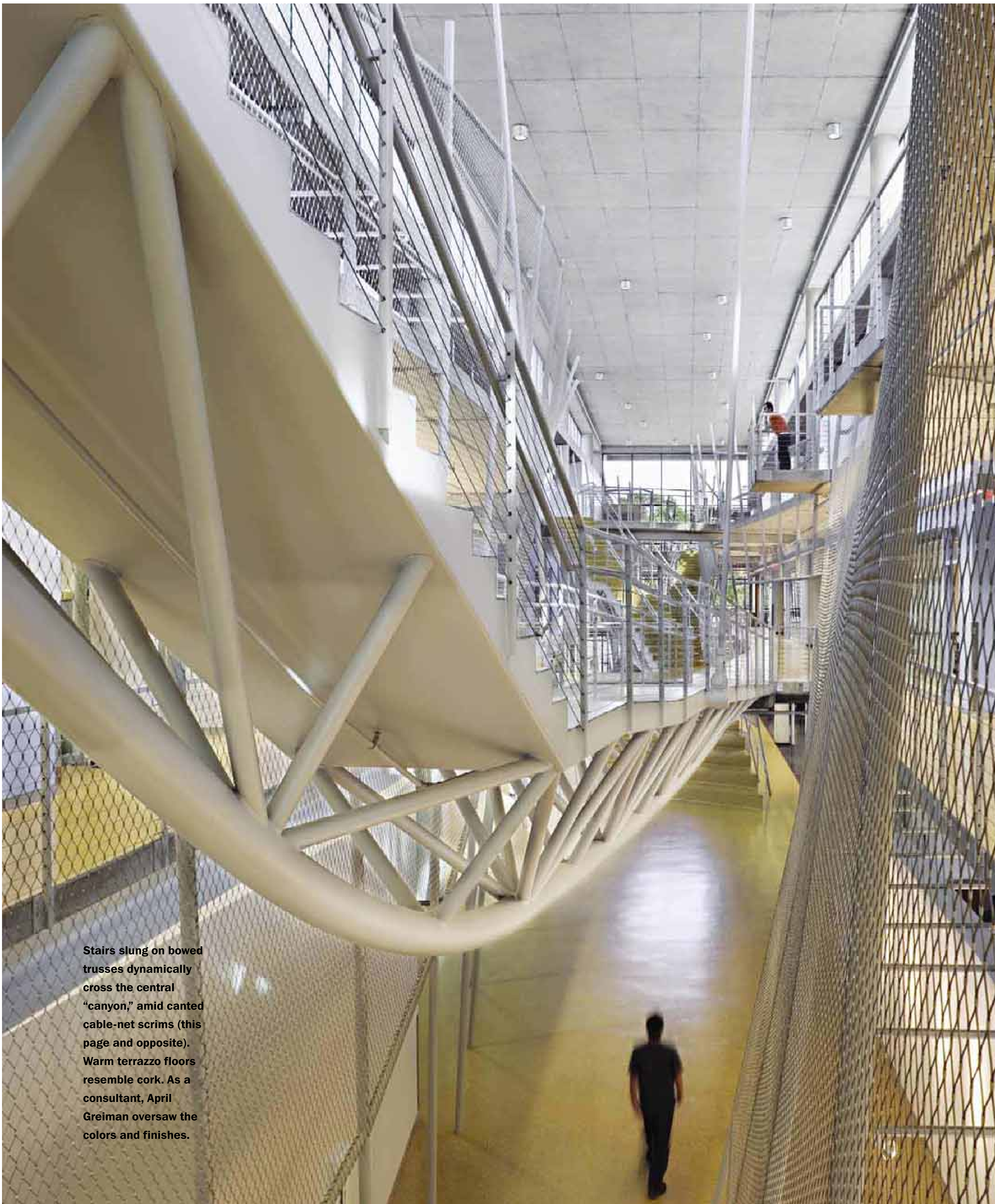
From the canyon, little remains hidden, with glass-fronted administration and art studios on the ground floor, offices on the second, and architecture studios at the top. The interior glazing invites views into work spaces, stimulating cross pollination. "Multipurpose 'piazzas' or social areas are where idea exchange really happens," says Rotondi. And because the "melody line"—long concrete floor slabs flanking the central zone—forms a quiet datum, the interior achieves balance, keeping the rhythmically charged circulation elements from becoming distracting or overwhelming. While Rotondi sees SCI-Arc's home as "neutral, enduring, and forgiving in its industrial nature" and Alvar Aalto's Helsinki architecture school as "intimidating in its perfection," he considers Prairie View a middleground: an architectural presence that is neither totally neutral nor overpowering.

Hardly intimidating, the "dancing" new building has inspired everyone, reports Dean Sabouni, to spend more time at school, a place they helped create. Certainly, the scheme emerged from an ongoing dialogue, a true give-and-take, between students and architect. But that was just the beginning: The degree candidates, actively engaging a new set of architects, are already vetting designs for the next three structures on campus. ■

Sources

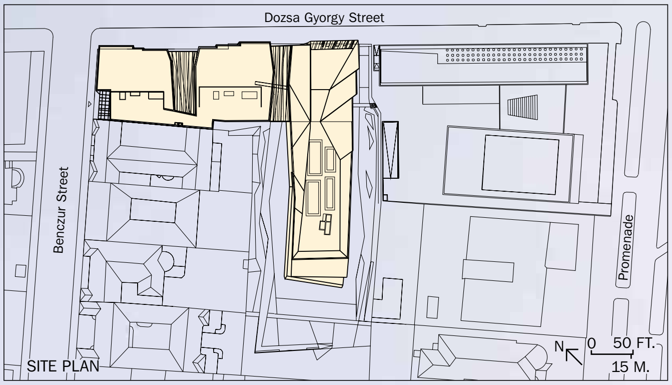
Brick: *Acme Brick*
Sunscreen: *Beck Steel*
Glazing: *Viracon*

For more information on this project, go to Projects at **www.archrecord.com**.



Stairs slung on bowed trusses dynamically cross the central "canyon," amid canted cable-net scrims (this page and opposite). Warm terrazzo floors resemble cork. As a consultant, April Greiman oversaw the colors and finishes.

Set in a neighborhood that has a park and landmarks such as the municipal museum, the ING building maintains the scale and massing, though not the architectural expression, of nearby buildings. Van Egeraat negotiated the difference in height between a 19th-century villa on one side of ING and a Communist-era concrete structure on the other by designing a roof that steps up from west to east.


SITE PLAN
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Benczur Street
Promenade
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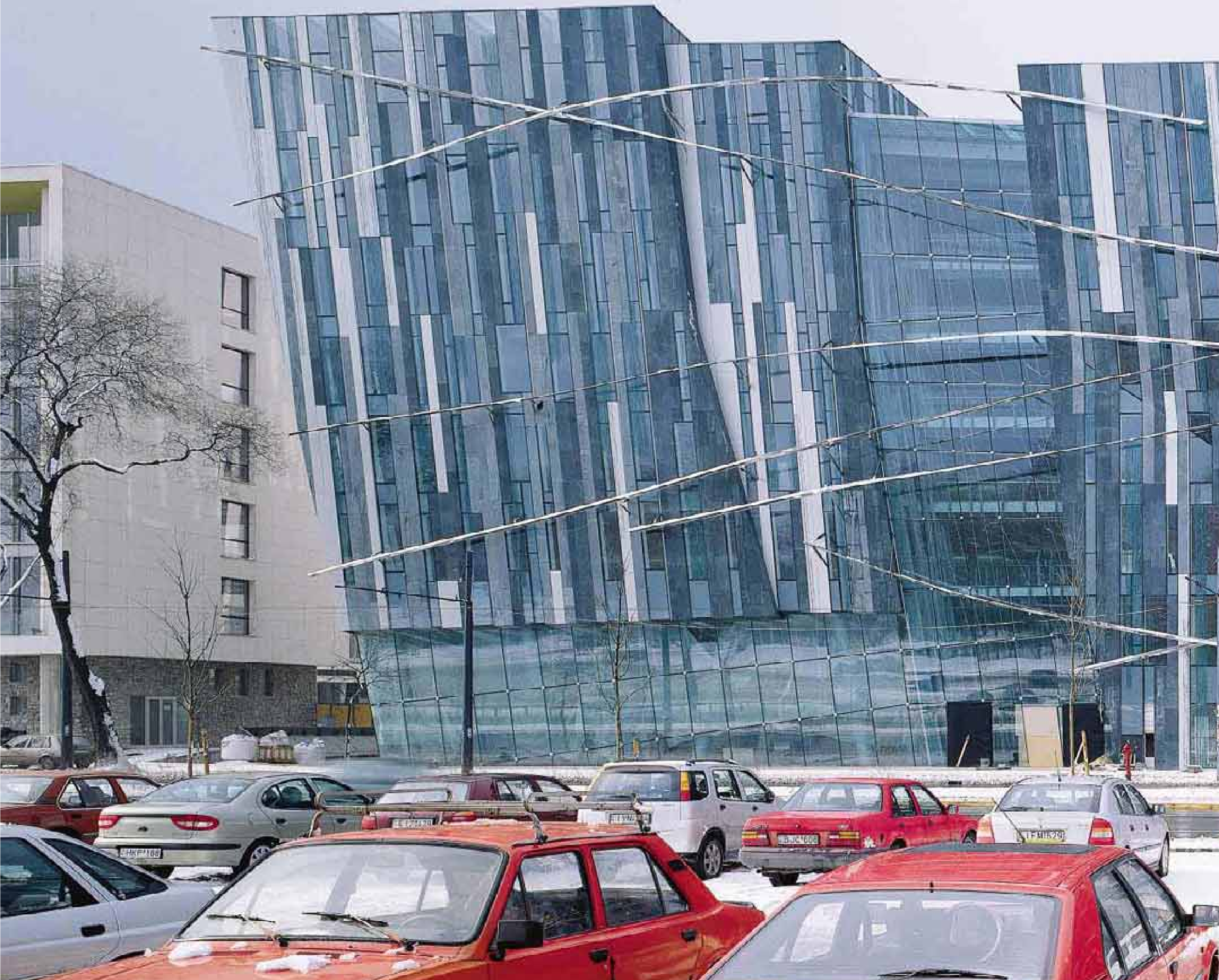
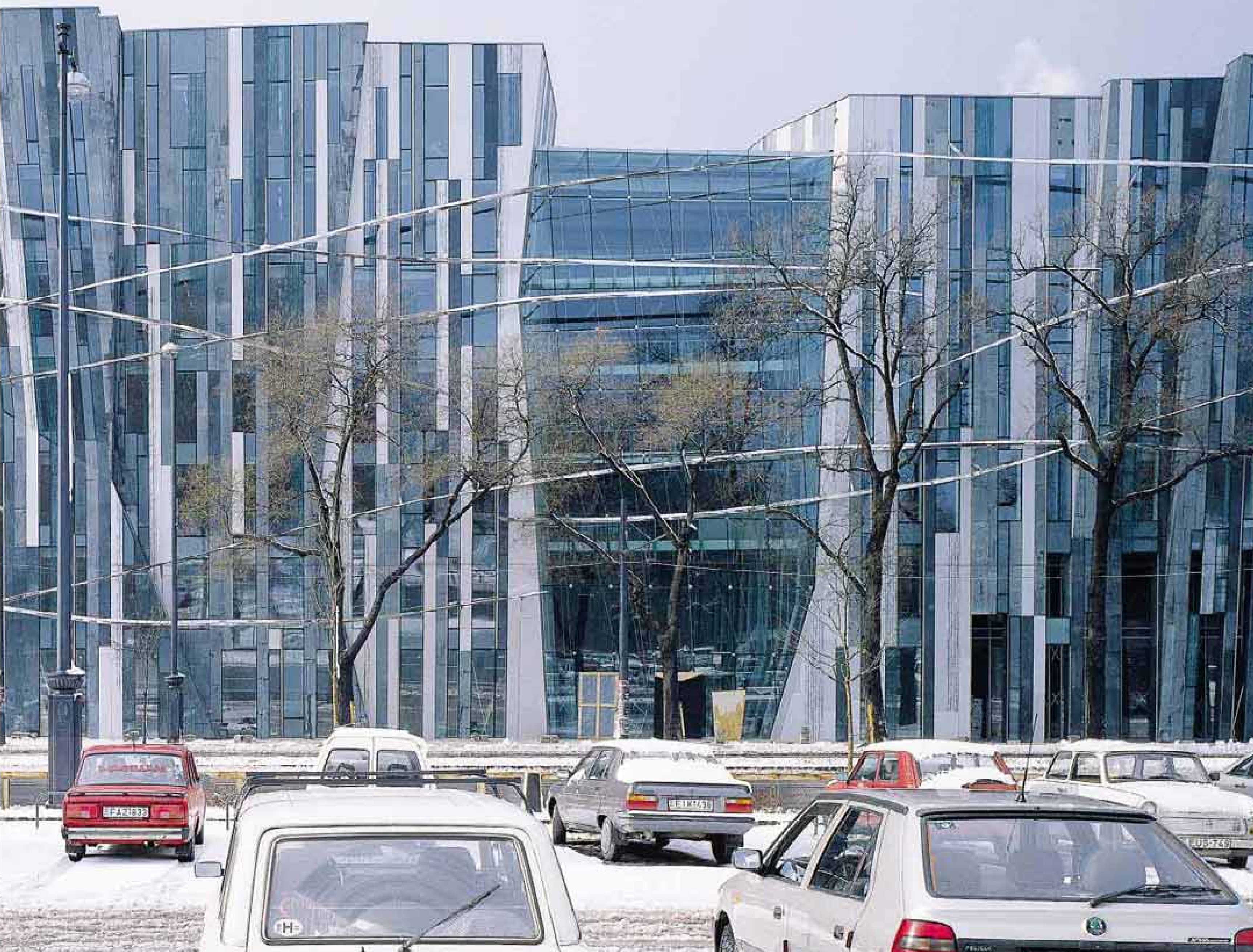
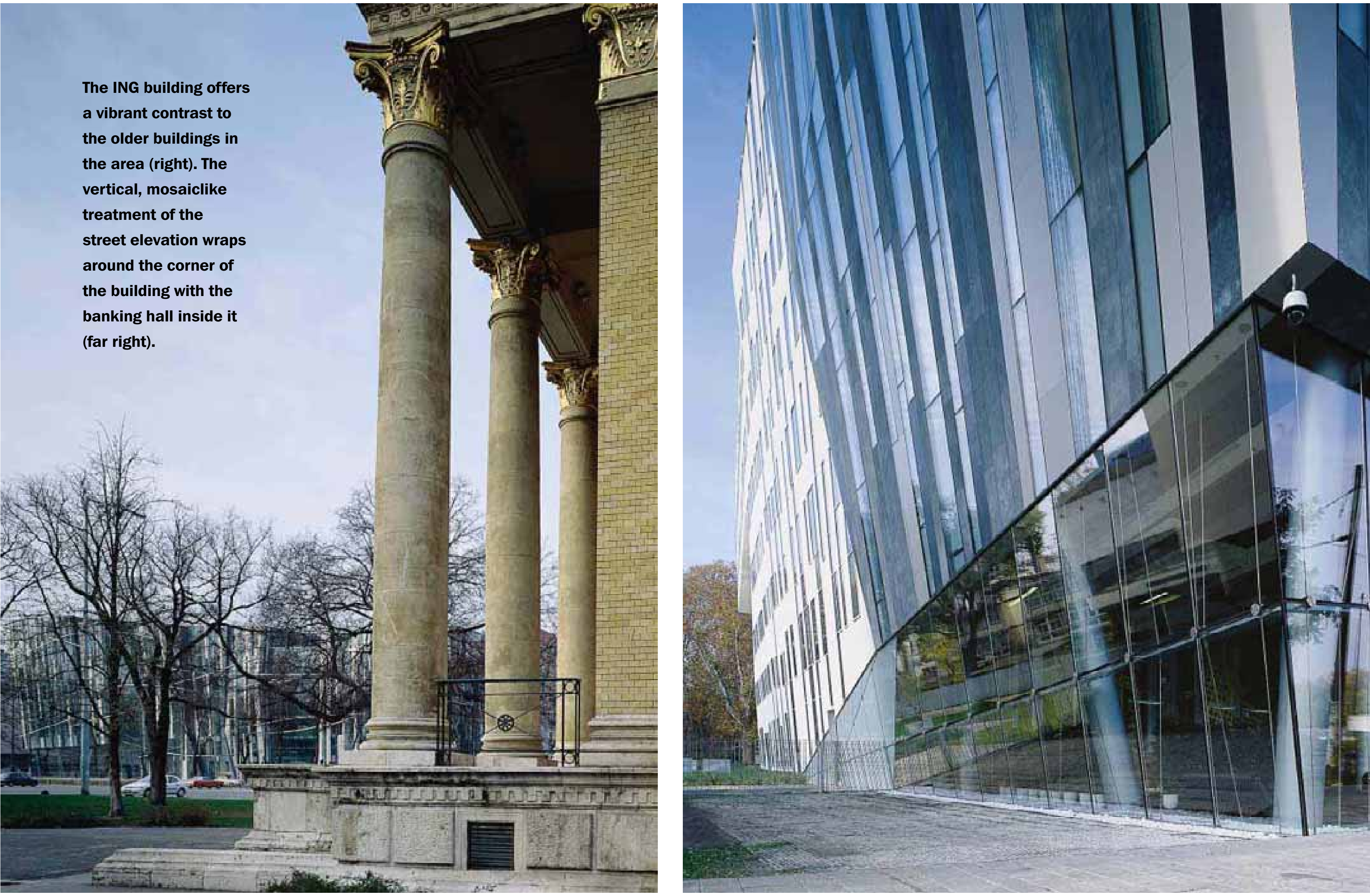
15 M.



Erick van **Egeraat** provides a shot of architectural adrenaline to a staid streetscape with his **ING HEAD OFFICES** building in Budapest





The ING building offers a vibrant contrast to the older buildings in the area (right). The vertical, mosaiclike treatment of the street elevation wraps around the corner of the building with the banking hall inside it (far right).

By Tracy Metz

Hungarians talk about "the changes," a blanket term covering both the fall of the Iron Curtain in 1989 and the country's entry into the European Union in 2004, but admit little has changed in terms of Budapest's architecture. "Socialism still has a strong grip on our minds," said a young Hungarian late one night at one of the clandestine cafés that pop up unpredictably at changing locations in the city's many interior courtyards. "Our buildings are still mediocre." Dutch architect Erick van Egeraat, though, is shaking things up with projects such as the ING Head Offices on Dózsa György Street, commissioned by the real estate arm of ING, the large Dutch financial services company.

Van Egeraat, who had been a principal at the firm Mecanoo, now heads Erick van Egeraat Associated Architects (EEA), with offices in Rotterdam, London, Prague, Budapest, and Moscow, an arrangement that keeps him on the road 200 nights a year, he claims.

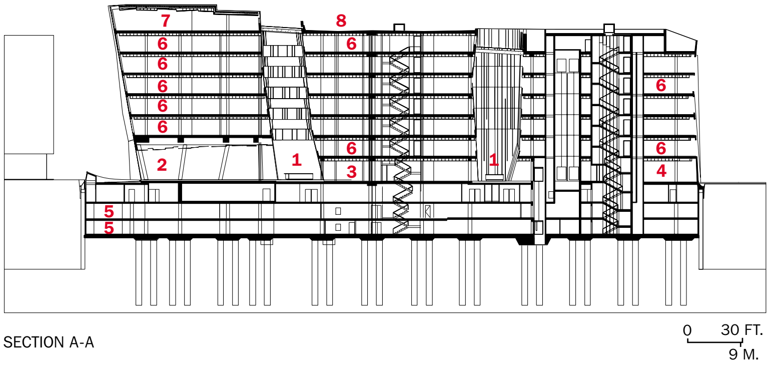
The ING project, a multitenant office building that addresses the street with a hyperkinetic facade, makes a striking addition to Budapest, with its tradition of solid, even stolid architecture. Located near landmarks such as the municipal museum, Városliget City Park, and the vast and empty Square of Heroes, the building sits around the corner from the increasingly cosmopolitan Andrassy Boulevard (home of Budapest's only Apple store). The building's expressive exterior has already become a symbol of a new era in the city's architecture. For the developer, the project turned out to be a very good deal: A day after taking possession, ING sold it to Deutsche Bank for a serious profit.

The 270,000-square-foot building, which sits above three levels of underground parking, accommodates public functions on the ground floor, such as a bank and a restaurant, with six floors of office space above (including EEA's Budapest branch), and a penthouse boardroom. It replaces two Stalinist-style office blocks from the 1950s and is bordered on one side by a Modernist box in the best Communist tradition (which EEA had renovated earlier), and on the other by a 19th-century villa: "It was my intention to bring cohesion to the street without copying the past," explains van Egeraat. The new building

Project: *ING Head Offices, Budapest, Hungary*
Architect: *Erick van Egeraat Associated Architects—Erick van Egeraat, János Tiba, Judit Z. Halmágyi, Eszter Bódi, project architects; Zita Balajti, Zsófia Bálint, Balázs Beczner, Ágnes Benkö, Gabriella Grand, Zsófia Gutvill, Zoltán Gyüre, Sándor Kogan-Szabó, Darko Kovacev, Áron Láncos, Michael Rushe, project team*
Engineers: *MTM (structural); SMG-SISU (mechanical and electrical)*
General contractors: *Csarnok 2002*

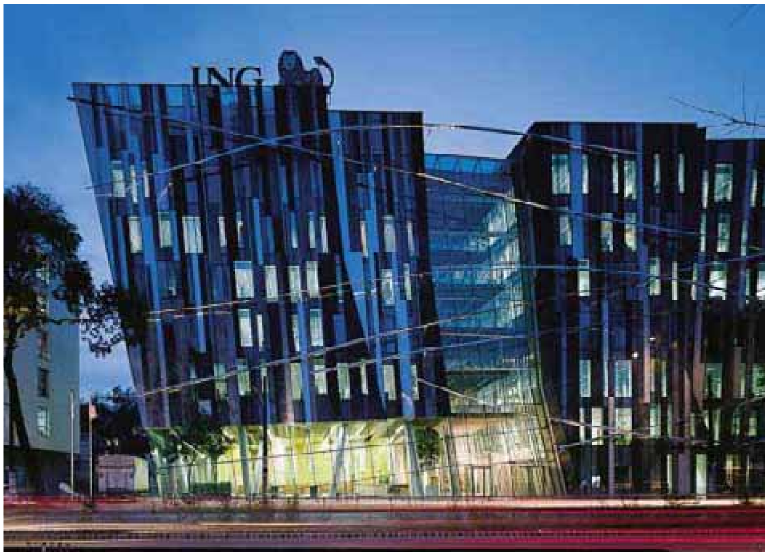
Tracy Metz is RECORD*'s international correspondent in Amsterdam and writes for the Dutch newspaper* NRC Handelsbad.

PHOTOGRAPHY: © CHRISTIAN RICHTERS

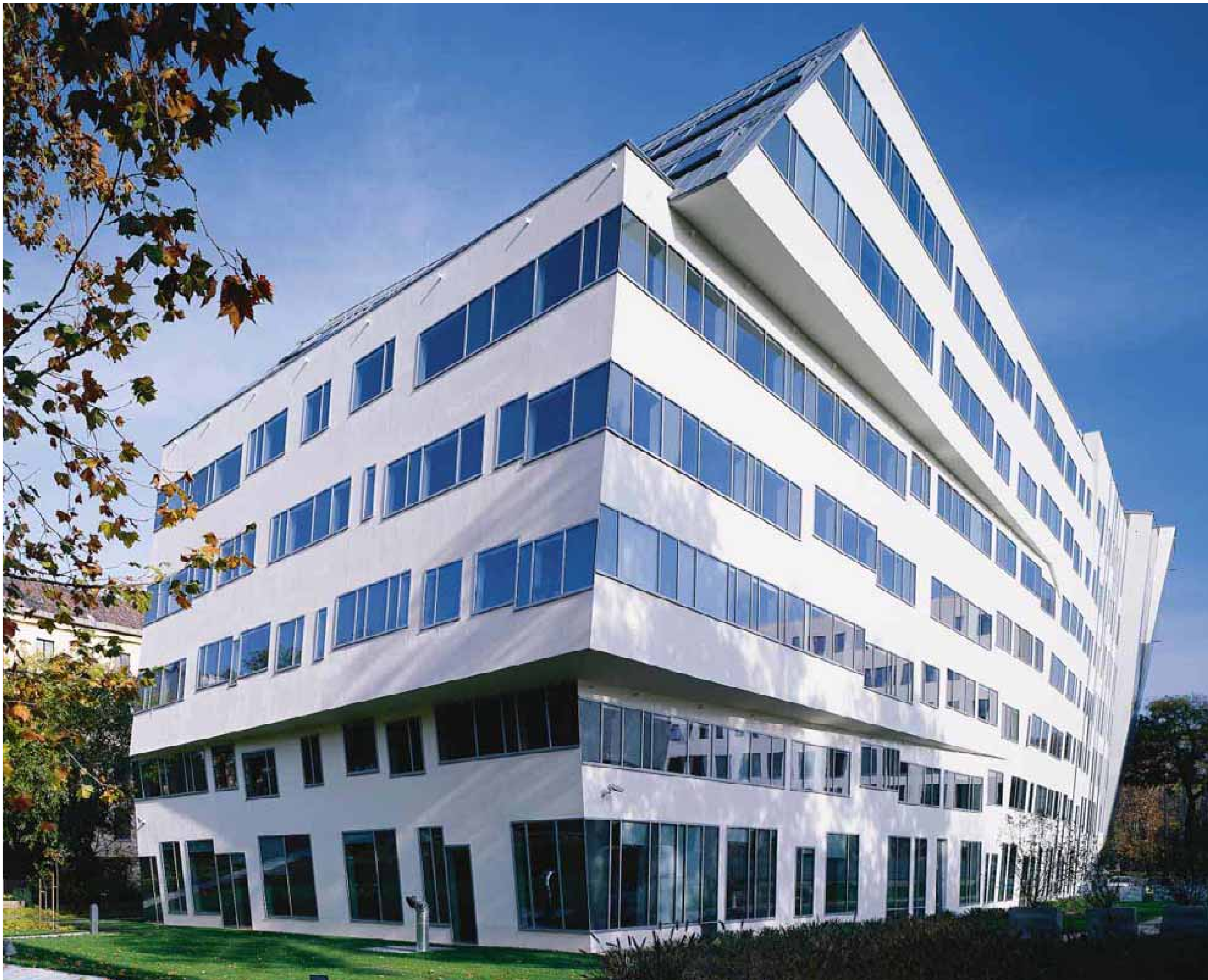


SECTION A-A

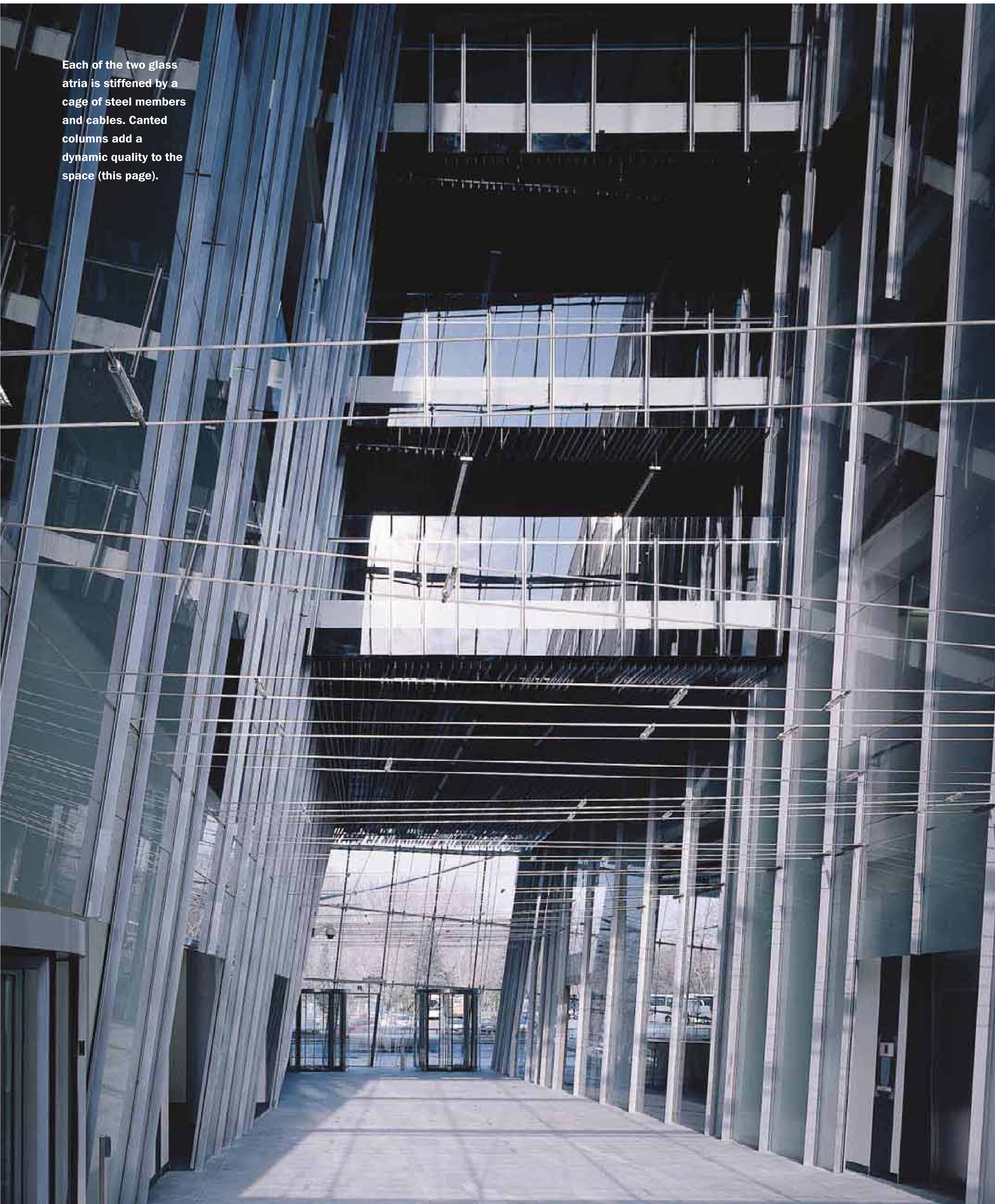
1. *Foyer*
2. *Banking hall*
3. *Meeting*
4. *Café*
5. *Parking*
6. *Offices*
7. *Boardroom*
8. *Roof terrace*

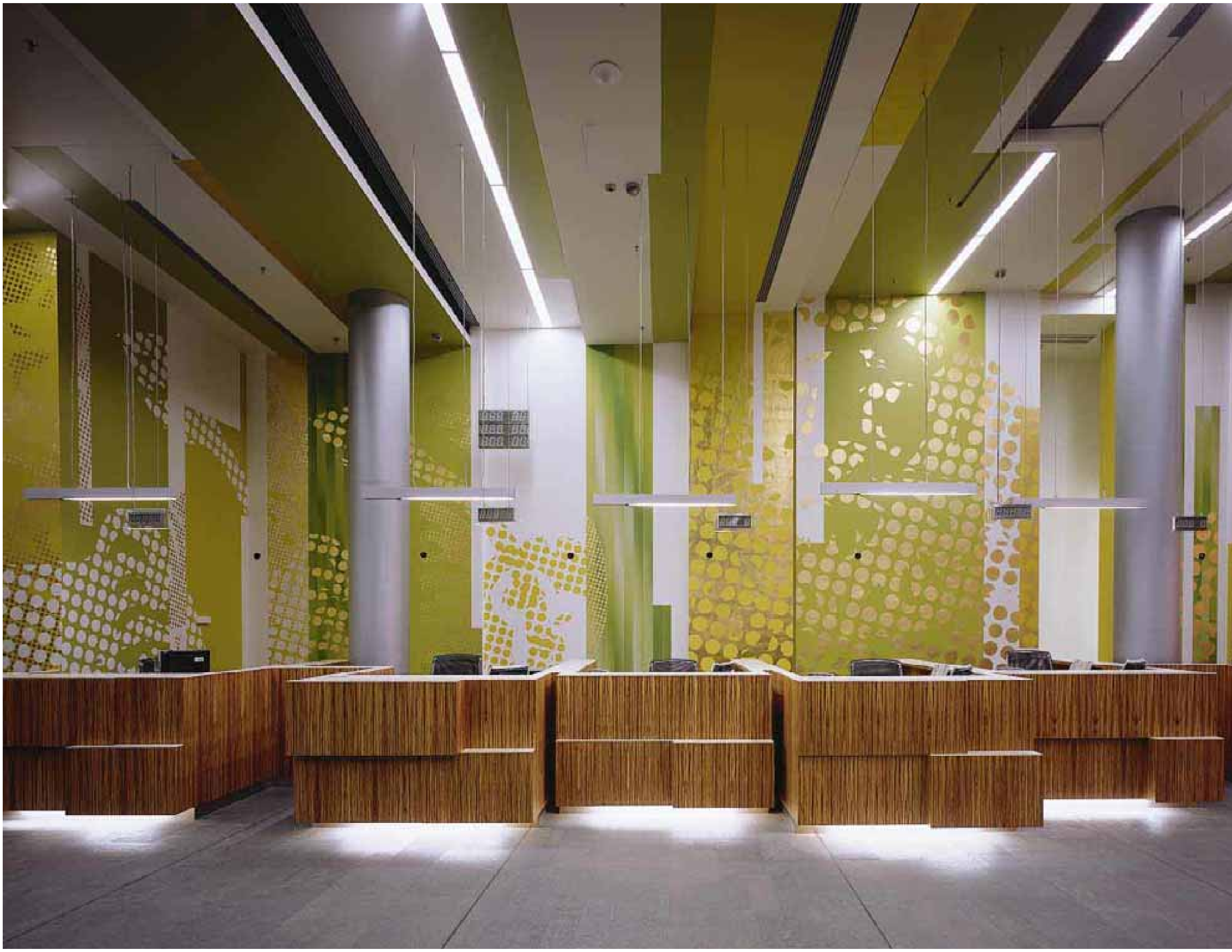


Van Egeraat broke the building into three volumes separated by a pair of glazed atria, then tied the composition together with looping, decorative metal ribbons (above). Fenestration on the sides and back is a sly reference to Dutch Modernism (below).



Each of the two glass atria is stiffened by a cage of steel members and cables. Canted columns add a dynamic quality to the space (this page).



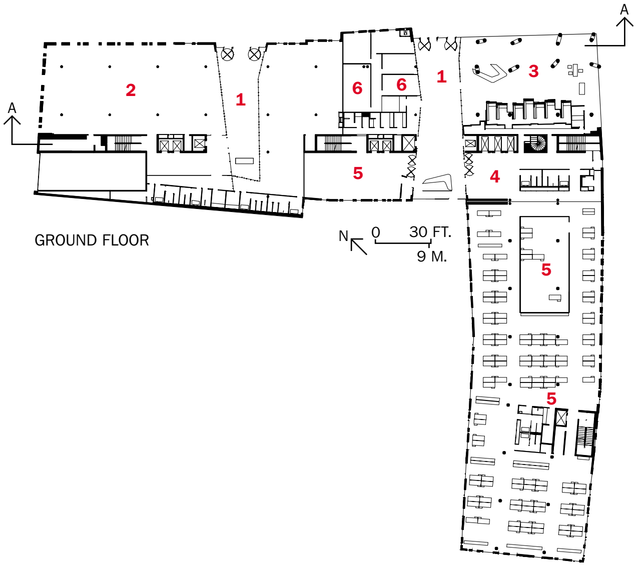


increases in height as it makes the transition from the older villa to the much larger Communist box. Across the entire length of the facade, van Egeraat floated shiny steel ribbons, vestiges of the flowing lines he drew in one of his very first sketches to indicate the continuity of time symbolized by these three buildings.

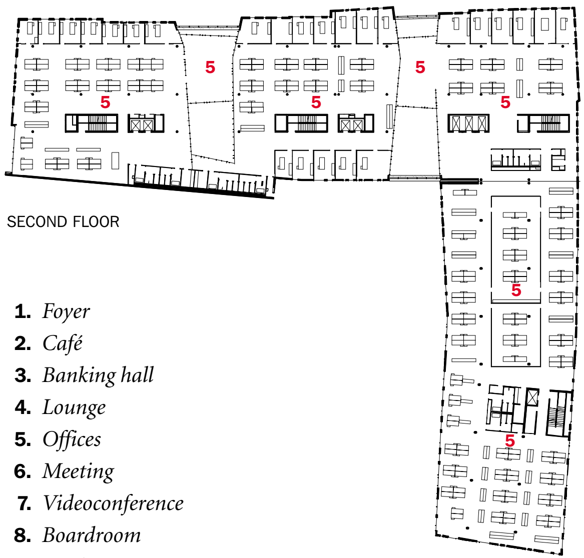
The architect broke the building into three separate volumes connected by a pair of glazed, asymmetrical atria that seem to sway in between. He clad all three volumes in irregular vertical strips of aluminum, glass, and stone, which were hand-mounted on the poured-in-place concrete structure. To this mosaic of verticals, he added silk-screened stripes that look rough and hand-painted, providing a craftsmanlike and tactile element to the skin of the various folds and creases. In his first project in Budapest, a rehabilitation and extension of a landmarked building for ING on Andrassy Boulevard, van Egeraat silk-screened the glass addition with a pattern bearing a remarkable resemblance to stone. That building is now empty, and the architect hopes it can be used as a fashion center, including a department store and restaurant.

The street facade of the new building seems to ripple, with parts

The banking hall offers a vibrant space with decorative wall painting, counters clad with zebrano-wood veneer, and Italian granite floors (above). The boardroom (right) enjoys views at the top.

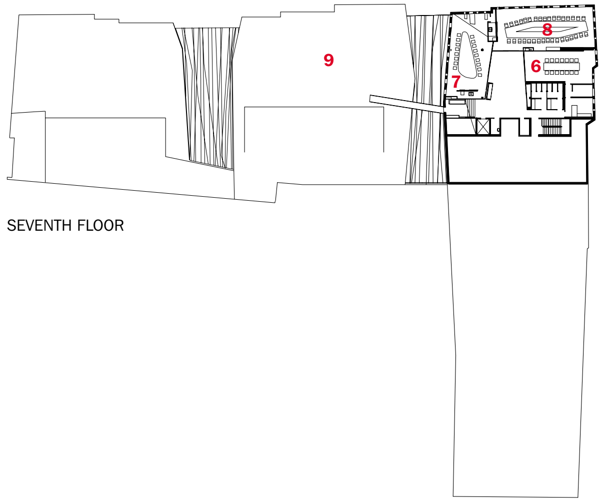


GROUND FLOOR



SECOND FLOOR

1. *Foyer*
2. *Café*
3. *Banking hall*
4. *Lounge*
5. *Offices*
6. *Meeting*
7. *Videoconference*
8. *Boardroom*
9. *Roof terrace*



SEVENTH FLOOR

ING offers 270,000 square feet of space on seven floors with plans that provide plenty of daylight in offices and spaces such as the banking hall (left).

sloping forward at a delicate angle and others leaning back like the ribs of a half-open fan. Then they fold inside to form the ceilings of the offices, atria, and bank lobby on the ground floor. Inside the atria, van Egeraat stiffened the glass curtain walls with a cage of steel cables stabilized by long steel planks. On the outside, he tied together the entire elevation with looping metal ribbons that are purely decorative. Lamps in the sidewalk uplight the facade, heightening the building's dramatic impact on the cityscape.

A jagged roofline—the result of the height differences of the building's three volumes—emphasizes the design's dynamic character. And by making it impossible to read the individual floors behind the mosaic facade, van Egeraat emphasizes the sculptural aspect of the project.

Van Egeraat calls his design principle "composed randomness," and applied it particularly to the building's fenestration. "Even in this age of computer-aided design, the windows were very complex to design," he says. "I used a set number of window types, of course, but I wanted the building to look as if they were all different. Moreover, when you look up from the street, some windows seem to tower over you, and others are foreshortened because they lean back." In the boardroom at the top of the tallest of the three volumes, some of the windows extend all the way up to and over the roof, emphasizing the "randomness" of their placement.

The building calms down on the back and sides, where the architect created fluid, boatlike forms using white plaster surfaces, and horizontal fenestration that evokes the strip windows of Modernism, the style van Egeraat loves to hate.

Inside, though, the off-balance aesthetic starts up again. For example, van Egeraat finished the walls of the bank lobby with green and gold graphics, clad blocky counters with wooden slats, and tilted silver columns at odd angles. "I felt freer here," he says, "since this is a public space and will probably change more often than the offices."

Van Egeraat describes his architecture as "Modern Baroque," an intentional riposte to the fatigued brand of Modernism that dominated the Netherlands both as an ideology and as a style for most of the 20th century. "My architecture has to do with emotion and intuition," he states, "not with the anemic less-is-more reductionism that has made architecture into a dogma rather than an art. My task is to make beautiful things. How they are made is not important, what matters is how they look." ■

Sources

Glass and aluminum facade: *Alukol*

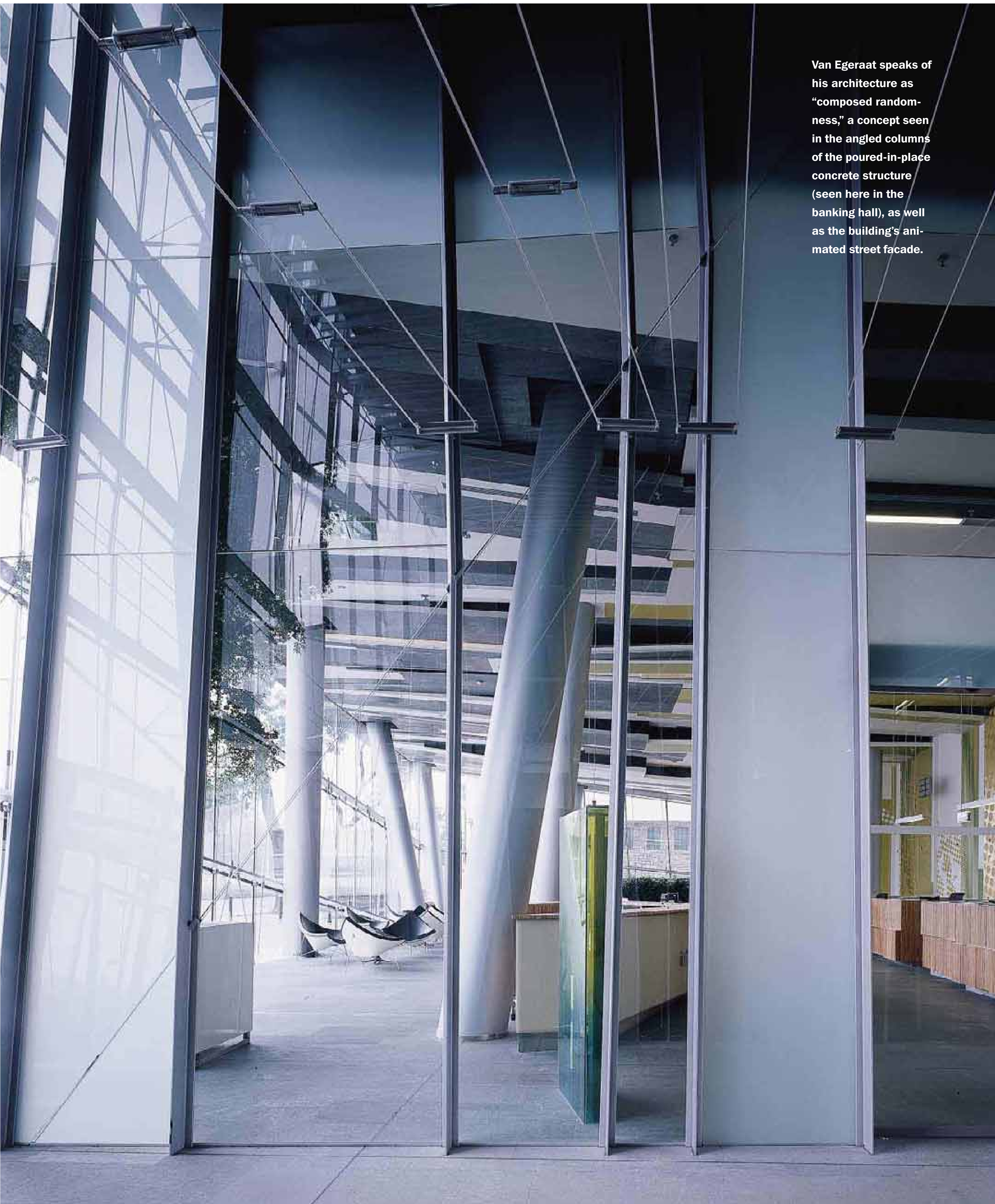
Atrium glass wall and roof: *Helmut Fisher, with RFR*

Internal glass facade: *Havasi*

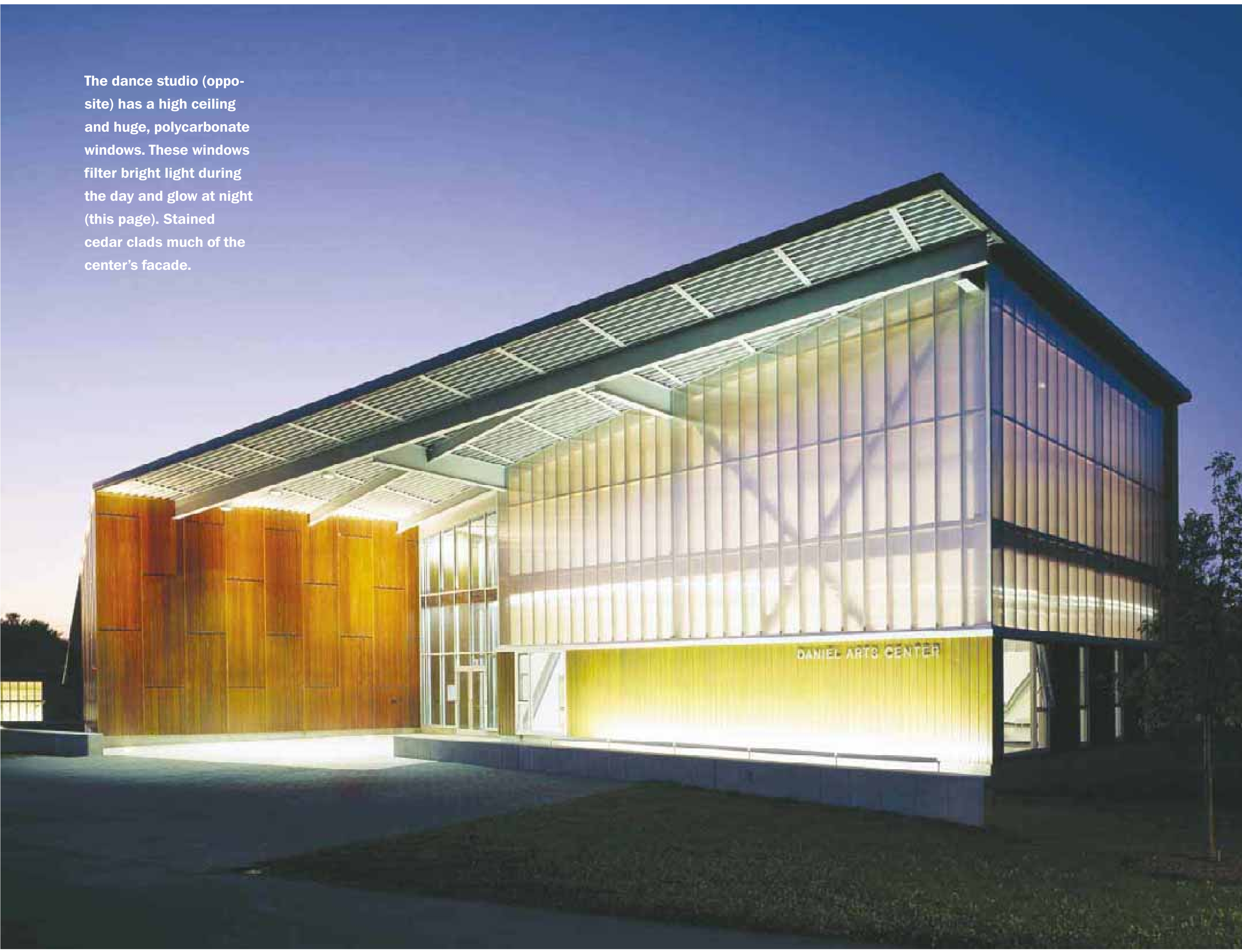
Stainless-steel facade ribbons: *Határ-T Plusz, with System Steel*

Granite floors: *Reneszánsz*

For more information on this project, go to Projects at **www.archrecord.com**.



Van Egeraat speaks of his architecture as "composed randomness," a concept seen in the angled columns of the poured-in-place concrete structure (seen here in the banking hall), as well as the building's animated street facade.



The dance studio (opposite) has a high ceiling and huge, polycarbonate windows. These windows filter bright light during the day and glow at night (this page). Stained cedar clads much of the center's facade.

By Sam Lubell

Founded as a 1960s experiment for motivated and restless high school juniors and seniors to advance directly to college, Simon's Rock College of Bard began with a tiny student body on a campus nestled in the Berkshire Mountains. In recent years, the school, hoping to expand its offerings, has enlarged its student numbers by about a third, and has begun augmenting its facilities to match, building a new athletic center, science center [RECORD, February 2000, page 88], dormitory, and upcoming student union. But while doing this, explains longtime dean (and now English department chair) Bernie Rodgers, the school didn't want to lose the quirky, alternative character that made it special in the first place.

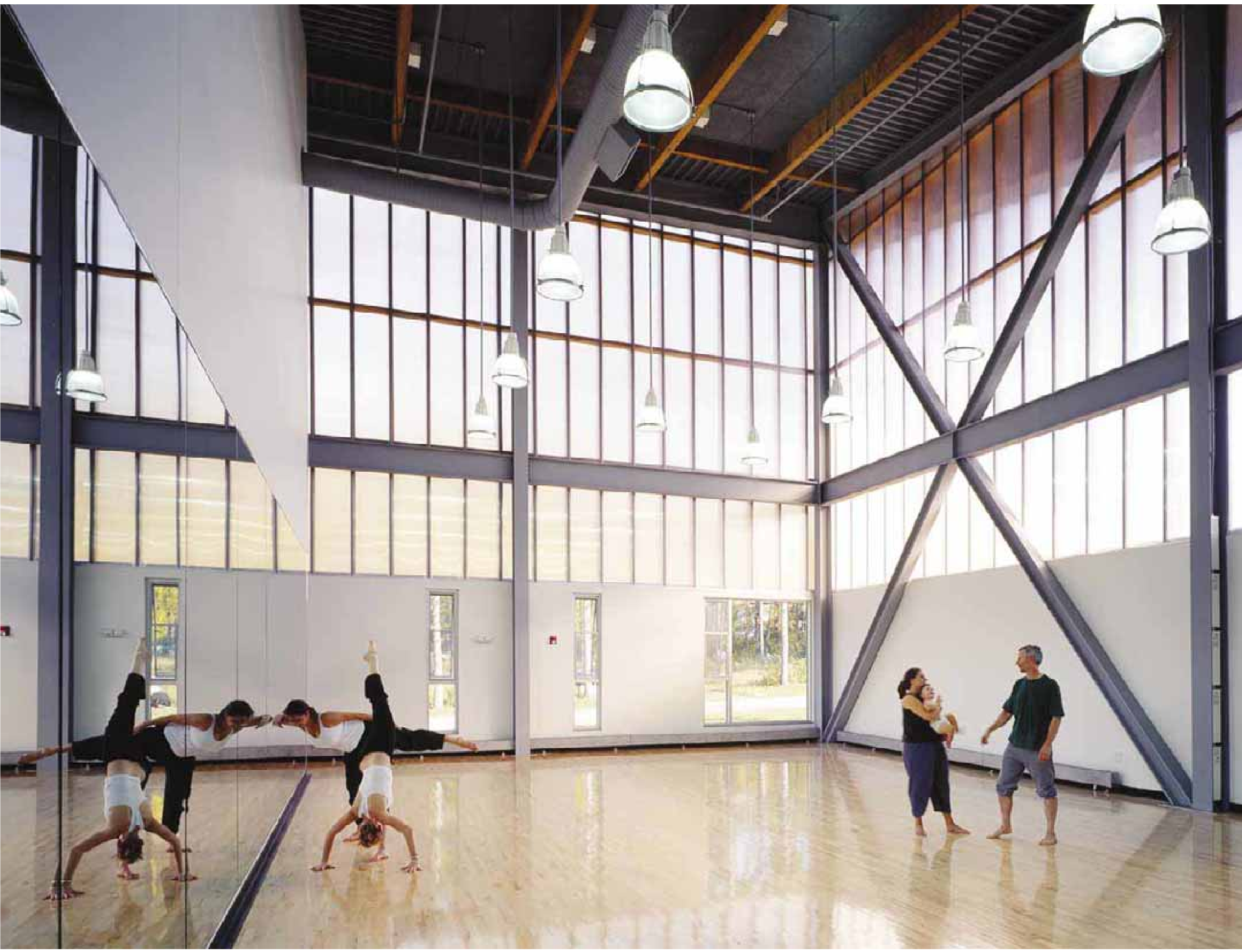
Therefore, in designing the school's Daniel Arts Center, Boston-based Ann Beha architects had a lot to negotiate. It wanted to retain the uniqueness of the college and respect the surroundings of verdant forests, timber frame buildings, converted barns and sheds, and Modern construction. At the same time, it sought a contemporary set of buildings that would be a symbol of the school's progress and a literal public face at the campus's edge. All within a modest $12.5 million budget.

The 53,000-square-foot complex, which triples the school's total arts space, is located on a fairly steep incline on the roughly 5-acre site of an abandoned orchard near the campus entrance. It replaces a quaint but outmoded cluster of off-campus dairy barns used for the arts. In order to respect the campus's scale, maintain intimacy, and make the center's elements more legible, the architects broke the complex into three parts: one

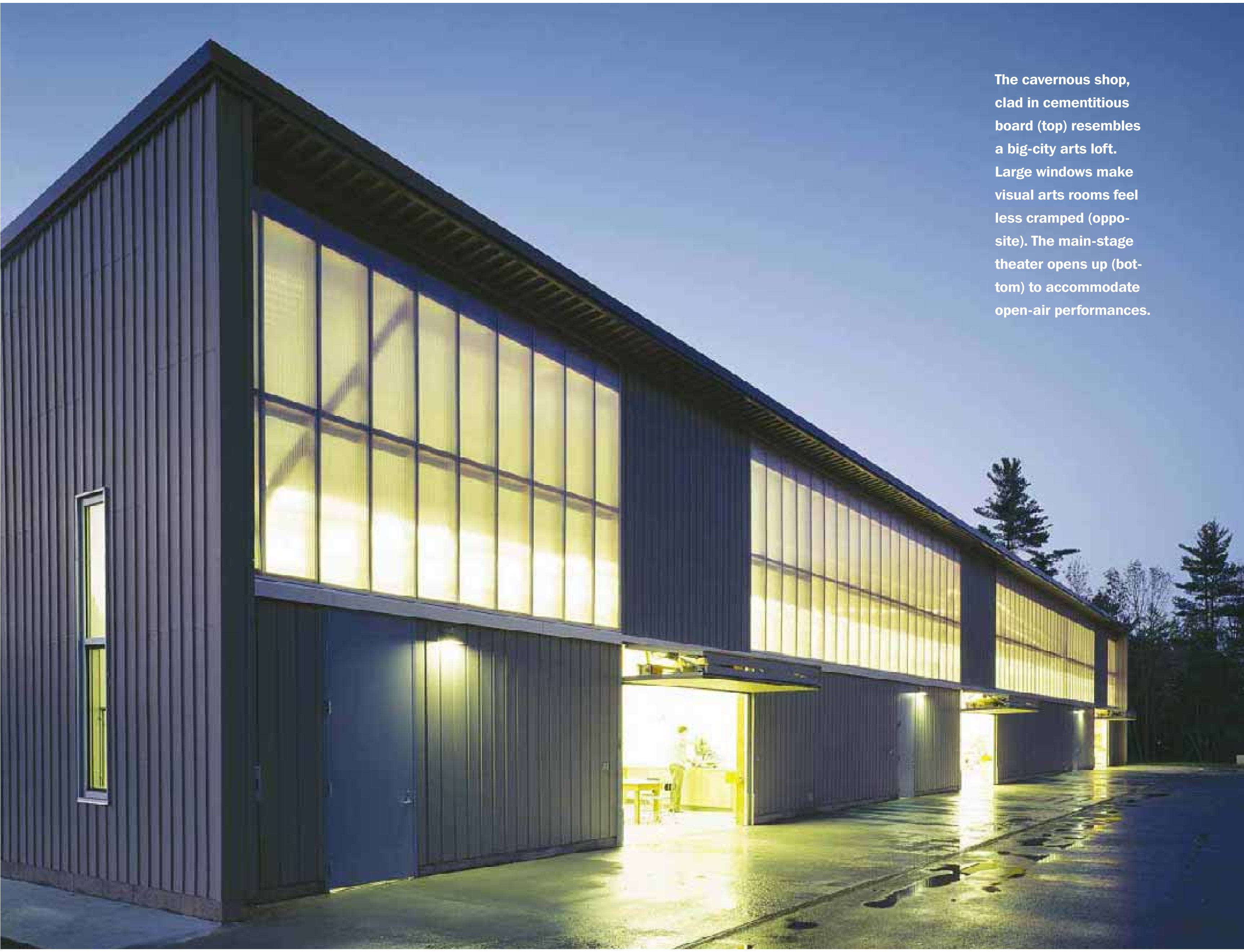
---

Project: *Daniel Arts Center, Great Barrington, Massachusetts*
Owner: *Simon's Rock College of Bard*
Architect: *Ann Beha Architects—Ann Beha, FAIA, Robert Miklos, FAIA, principals; Geoffrey Pingree, AIA, project manager; Zachary Hinchliffe, AIA, project architect; Tom Kahmann, AIA, Patrick Tam, Mark Oldham, project team*
Engineers: *LeMessurier Consultants (structural); TMP Engineers (m/e/p, f/p); White Engineers (civil)*
Consultants: *Reed Hilderbrand (landscape); Acentech (acoustical); Fischer Dachs Associates (theater); Ripman Lighting Consultants (lighting)*
General contractor: *Mullaney Corp.*

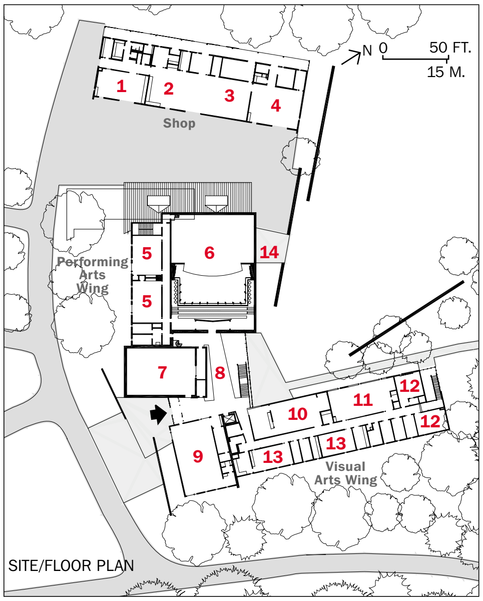
PHOTOGRAPHY: © PETER VANDERWARKER



Ann Beha Architects creates a dynamic campus symbol while respecting tradition and creativity at the **DANIEL ARTS CENTER** of Simon’s Rock College of Bard



The cavernous shop, clad in cementitious board (top) resembles a big-city arts loft. Large windows make visual arts rooms feel less cramped (opposite). The main-stage theater opens up (bottom) to accommodate open-air performances.


N
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50 FT.
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Shop
Performing Arts Wing
5
6
14
5
7
8
10
11
12
12
9
13
13
Visual Arts Wing
SITE/FLOOR PLAN

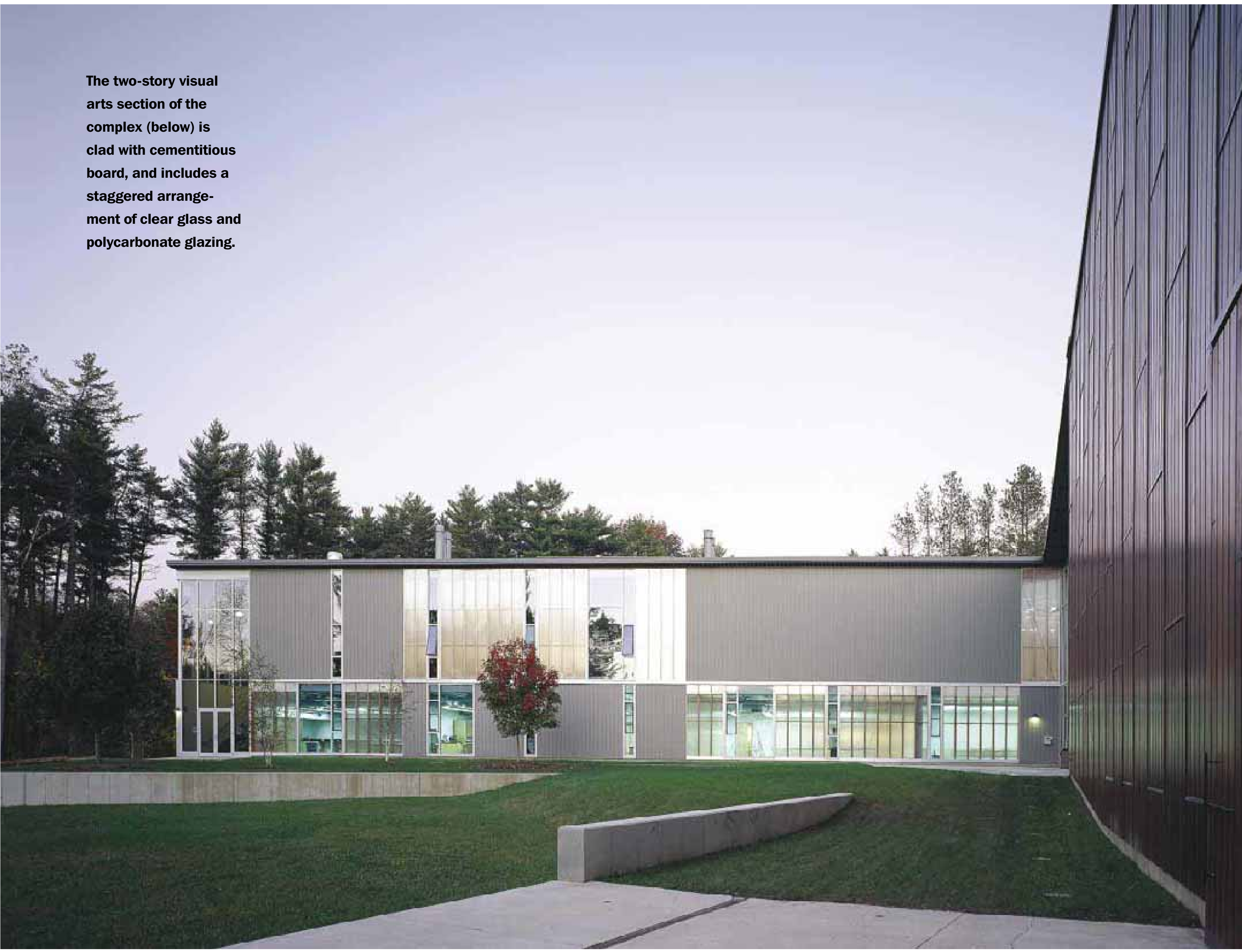
1. *3D Studio*
2. *Wood shop*
3. *Metal shop*
4. *Ceramics studio*
5. *Rehearsal space*
6. *Main-stage theater*
7. *Studio theater*
8. *Upper lobby*
9. *Dance studio*
10. *Electronic arts studio*
11. *Painting studio*
12. *Classroom*
13. *Arts lab*
14. *Outdoor stage*

for performing arts, one for visual arts, and a shop, which sits slightly apart from the others. The buildings are oriented to face the rest of campus and to maximize exposure to natural light.

The performing arts center, the facility's largest component, includes a 350-seat main-stage theater; a 100-seat studio theater; a dance studio; and several rehearsal, support, and office spaces. The roof's gradual pitch accommodates and minimizes the tall heights of the theater and dance studios. Stained cedar planking, applied vertically and highlighted at intersections with aluminum flashing, clads the outside of the main-stage and studio theaters, accenting them and adding a striking overall richness. Grayish cementitious board, installed with a vertical ship-lapped profile, clads the rest of the building, including the "back of house" theater spaces. Semitransparent polycarbonate glazing, wrapping around wood studs, elegantly filters light in and out of the building, reducing glare and heat, and glowing in a mesmerizing fashion at night. In the two-story lobby, exposed, large-span steel trusses, fir beams, and mechanical systems help maintain lofty heights and reveal the building's steel frame structure. This space is also lined partly with cedar, while clear glass curtain walls at its two entrances supply more natural light.

The theaters are sophisticated and technically advanced, ideal for students who often felt limited by their high school facilities. The main-stage theater includes a full fly space, spaces for several sets, and computer-controlled sound and lighting. Walls are partially clad with staggered, stained plywood, a simple solution that produces a dynamic effect. The architects attended theater classes in order to better understand students' needs, resulting in unique touches. The theater opens through a large sliding door at stage left to accommodate outdoor performances; the studio theater includes a walkable grid above the stage so students can learn technical skills without having to perch on a catwalk. The high-ceilinged dance studio, surrounded almost completely with polycarbonate glazing and opening to the lobby, receives perhaps the most natural light of any space in the complex.

The sleek visual arts center, clad in a vertical pattern of cementitious board, clear windows, and polycarbonate glazing, is connected, and perpendicular to, the performing arts component. The space has double-loaded corridors that accommodate an impressive selection of arts facilities, including a darkroom; printmaking, drawing, and painting studios; and audiovisual and electronic-music labs. The cavernous, cementitious-board-clad shop building, which has large garage doors, a



The two-story visual arts section of the complex (below) is clad with cementitious board, and includes a staggered arrangement of clear glass and polycarbonate glazing.

loading zone, and its own outdoor work yard, has a more industrial feel that Beha compares to an enormous body shop garage. Isolated from the rest of the complex, it contains facilities for wood working, metal working, jewelry making, and ceramics. As with most artists' lofts, its extreme openness provides room for variation and spatial relocation. "It's sort of a stage set for the arts," says Beha.

The complex effectively evokes both Modern and vernacular design. The main section's cedar cladding and sloped roofs lend it a contemporary sophistication, but still evoke the pastoral forms and even the cedar aroma of New England barns. Each building component establishes its own identity, but the three are unified by their proximity, and their simplicity—perhaps the complex's strongest features. Although it offers plentiful resources, it never feels overwhelming or discombobulating. Some smaller classrooms can feel a little cramped, but the prevalence of interior light and spatial order minimize this sensation. Still, outside, the landscape feels a little bare, partly due to a construction miscommunication that resulted in the removal of several trees from the former on-site orchard.

While the rich cedar cladding is a highlight, the cementitious board, necessitated by budget, is more pedestrian, despite frequent window piercings and the vertical board-and-batten arrangement. The material matches best with the industrial shop, and still fits well into the low-key campus, where similar materials are prevalent.

But inside, such concerns are forgotten, as visitors move along an extremely welcoming progression of spaces. While the building has a familiar feel, it is also, like the school's original mission, quirky and unique. The combination of varied spaces and materials, even the art lining the walls and standing in the lobby, contributes to this impression. Meanwhile, a long boardwalk connects the center to the rest of campus. Students use it for long conversations, to balance themselves on its side rails, and ride downhill on skateboards. Indeed, Simon's Rock's creative spirit is alive and well here. ■

Sources

Glass: *PPG; Polygal Cellular Polycarbonate*

Siding: *Hardiplank*

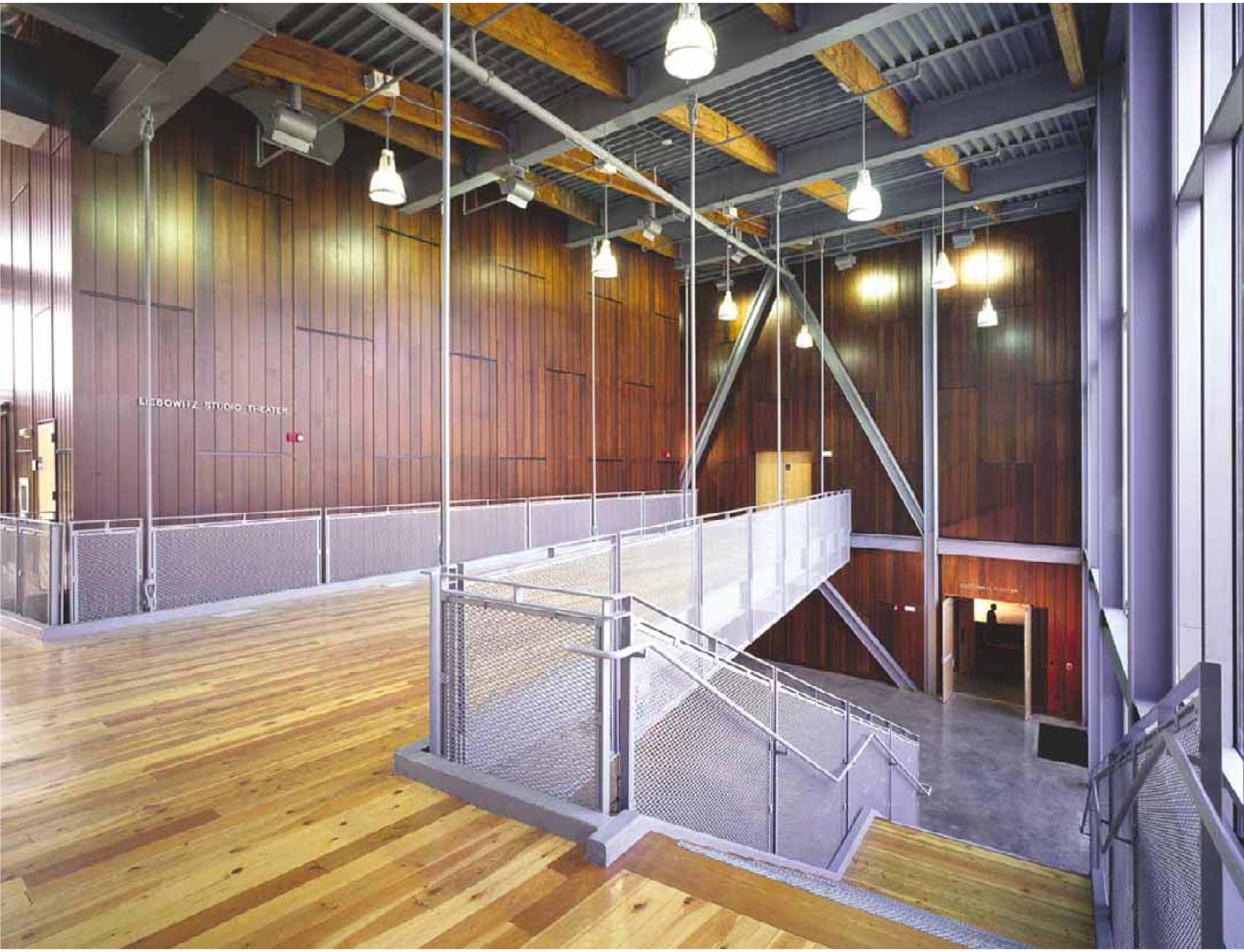
Paint: *Sikkens stain*

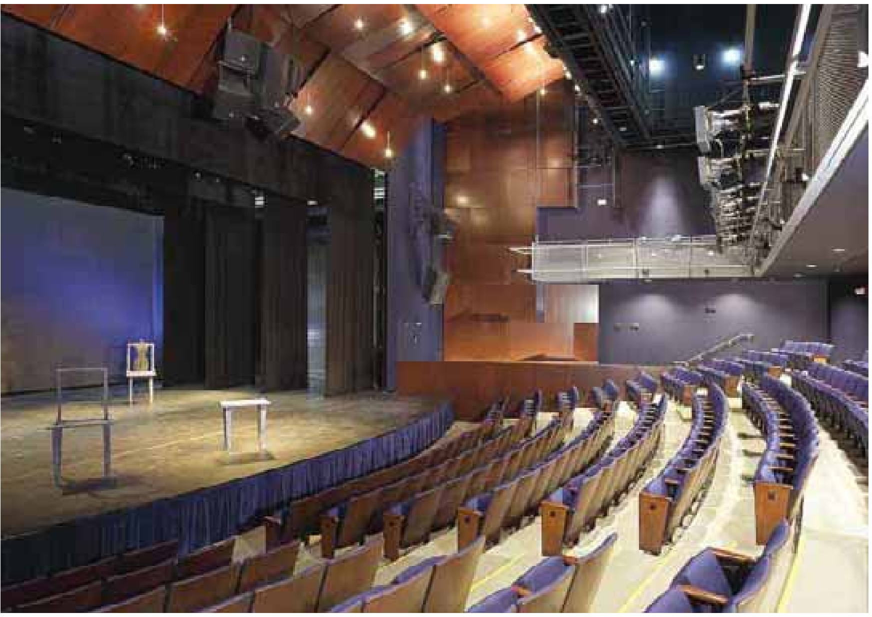
Metals: *ICI Devoe Coatings*

Drywall: *USG*

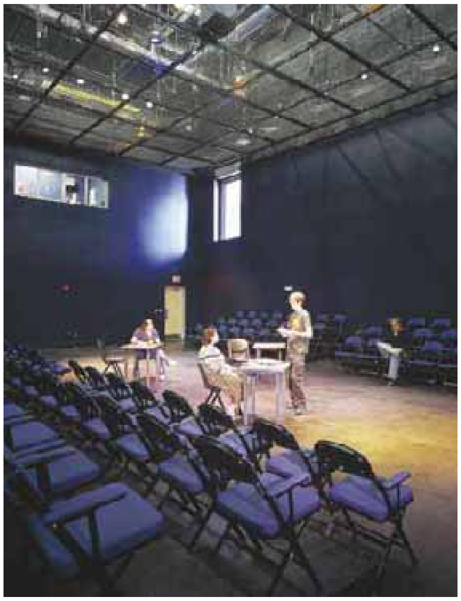
Lighting: *Hess America; Lithonia; Lightolier; Cole; Holophane; Kurt Versen*

For more information on this project, go to Projects at **www.archrecord.com**.





The exposed steel-and-fir beams and mechanical systems of the lobby help open up the space (top). Its cedar cladding lends both a sophisticated and rustic look. The main-stage theater (left) is lined with polished plywood panels. The studio theater (right) features a steel walkway above, used as a teaching space.



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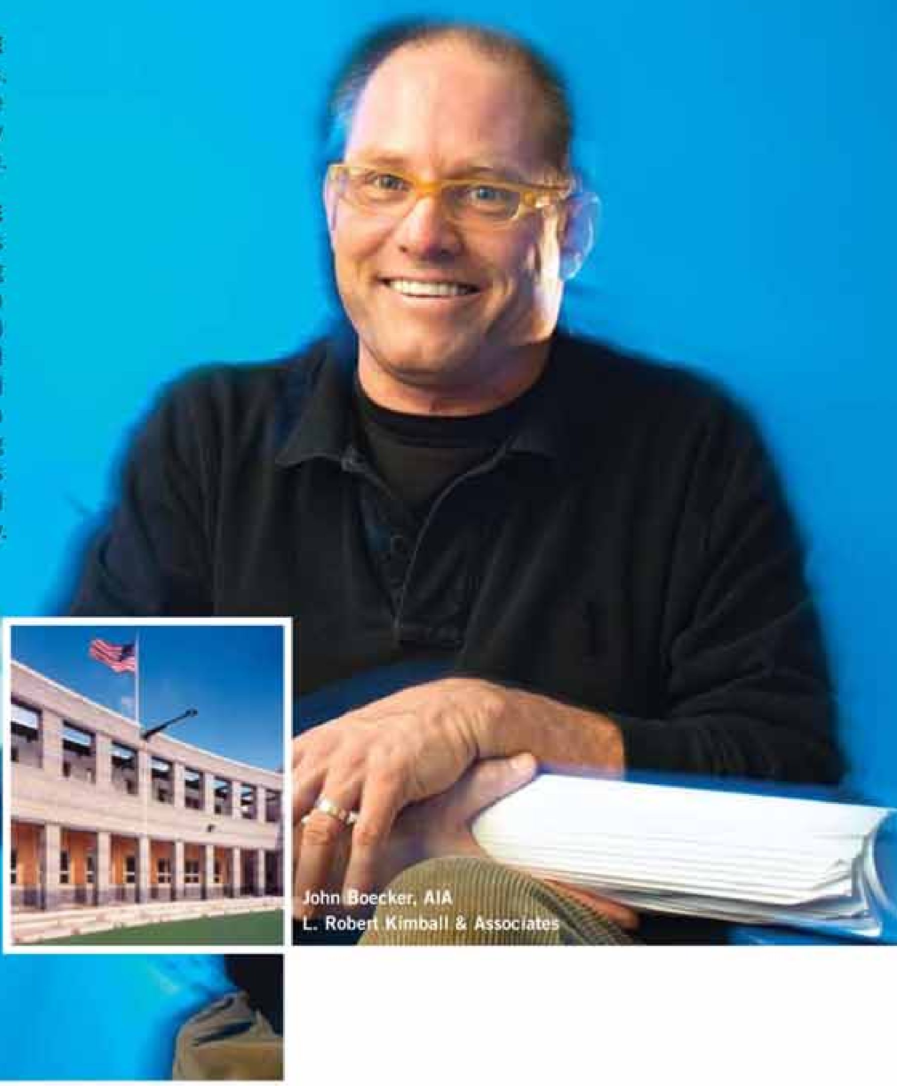

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ADAPTIVE REUSE

Extreme Makeovers

NOT EVERY PRESERVATION AND RENOVATION PROJECT NEED BE DONE WITH SUBTLETY; SOMETIMES A MORE RADICAL APPROACH IS NEEDED—BUT IT ALL DEPENDS ON THE ORIGINAL BUILDING.

By Suzanne Stephens

Long before *Extreme Makeover: Home Edition* became the rage among television viewers, the topic had been covered in print, particularly in the dramatic "before" and "after" remodeling issues of *Architectural Digest*. Once a year, since February 1992, the magazine has presented a riveting assortment of houses and apartments turned from dreary, bare-bones residences into ultra-luxurious settings.

In the world of larger, commercial buildings—and tight budgets—the same dramatic metamorphoses occur. We don't mean the painstaking restorations of treasured theaters or churches, or even the careful updating of old buildings for new uses. We are talking about the renovation where a deeply problematic piece of nonarchitecture is transformed into a designed artifact that is truly uplifting—one that not only affects the immediate surroundings, but sends a message that architecture still has the power to enhance the built environment.

In this issue, we present four "extreme makeovers" of varying types. Two—Independence Park, an office complex for Kaiser Permanente in Downey, California (near Los Angeles), by Frank R. Webb Architects; and Ironworkers Local 580: Apprentice and Training Facility in Long Island City, New York, by Daniel Goldner Architects—represent drastic conversions of visual dross into exemplary modern design. Both renovations, which transfigure the buildings' interior and urban environments, are located in light-industrial areas where architecture with a capital *A* is rarely seen.

A third makeover demonstrates that a renovation can be radical and at the same time leave the best alone. In renovating The Barn at Fallingwater, in Mill Run, Pennsylvania, Bohlin Cywinski Jackson discovered that the main barn interior, with its open slats letting in air and daylight, was too compelling a space to change. So it didn't. The firm convinced the client to change the program. This space is now rented out for weddings, receptions, and conferences during the warmer months of the year. And it still stands in all its pristine beauty. With the remainder of the complex, the architects sensitively used natural materials, including straw-bale panels, to underscore the structure's vernacular beauty.

A fourth example in this roundup is so extreme, it is in a category by itself. The Masanari Murai Art Museum, in Tokyo, dedicated to the work of the eponymous abstract artist, was designed by Kengo Kuma & Associates to preserve the traces of Murai's house and workshop. In this case, the original had deteriorated so much that little could be salvaged, except the atelier and parts of the wood structure. Kuma did so with a clarity and inventiveness that illustrates that even in the most extreme makeover, the spirit of the place can be saved. ■

1.

Downey, California

Frank R. Webb Architects took an old aeronautics building in an industrial wasteland near Los Angeles and made it habitable and visually palatable.

2.

Mill Run, Pennsylvania

Bohlin Cywinski Jackson knew when to leave well enough alone in converting two old barns into offices and an event space near Fallingwater.

3.

Long Island City, New York

Daniel Goldner Architects transformed a dilapidated brick structure into a training facility for ornamental and architectural ironworkers.

4.

Tokyo, Japan

Kengo Kuma & Associates created an evocative museum for a Japanese abstract artist using remnants from his former house and atelier.

For more information on these projects, go to Building Types Study at **www.archrecord.com**.

PHOTOGRAPHY: © FRED DALY ARCHITECTURAL PHOTOGRAPHY (1); NIC LEHOUX (2); DAVID JOSEPH (3); DAICO ANO ARCHITECTURAL PHOTOGRAPHY (4)

Independence Park

Downey, California

1

FRANK R. WEBB ARCHITECTS HAS TRANSFORMED A DREARY AERONAUTICS BUILDING NEAR LOS ANGELES INTO OFFICES FOR A HEALTH-CARE PROVIDER.

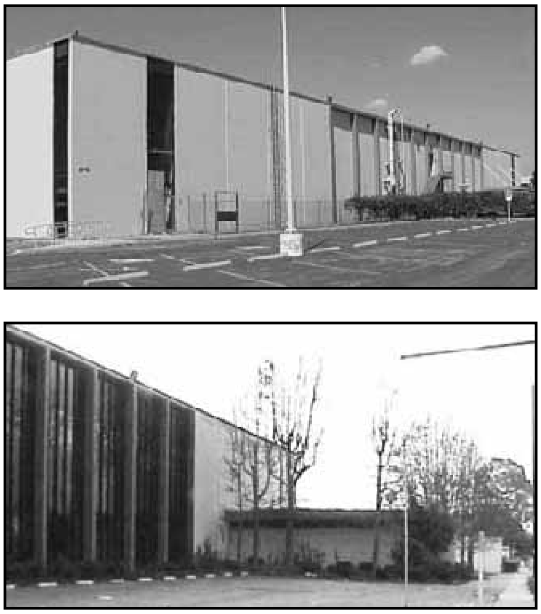
By Joseph Giovannini

Architect: *Frank R. Webb Architects—Frank R. Webb, AIA, principal; Ken Stein, AIA, senior project designer; Robert C. Gross, AIA, project architect; Pamela Domingo, project manager; Greg Coles, AIA, Shikha Chandrasena, Sagar Chavan, Alex Garcia, Patrick Daniels, Danielle Yafuso, Yllania Francis, Keith Fine, Steve Henrich, Glann Waggner, Betty Serafin, project team*
Client: *Kaiser Foundation Health Plan*
Engineers: *Brandow & Johnston Associates (structural); Westco Service (mechanical and plumbing); DPB Engineers (electrical); Paller-Roberts Engineering (civil)*
Construction management: *Intelisyn*
Consultants: *ah'bé Landscape Architects*

Size: *160,000 square feet*
Cost: *$16,000,000*
Completion date: *2004*

Sources
Masonry: *Orco Block*
Metal curtain wall: *U.S. Aluminum*
Glazing: *Trident*
Insulated plastic glazing: *Polygal*
Standing-seam roofing: *Marin*

For more information on this project, go to Building Types Study at **www.archrecord.com**.



The east elevation of the aeronautic structure (top) and the west elevation (above) looked hopeless.

The desolate mammoth that the nonprofit health-care-delivery provider Kaiser Permanente found in an industrial wasteland of expired aeronautics factories in Downey, California, was so off-putting that the employees, based in Pasadena, at first refused even to consider the move. Abandoned for five years, the building was a cold, characterless, 160,000-square-foot concrete bunker designed circa 1970 by engineers for Rockwell, an aerospace company whose demands for secrecy precluded windows and skylights.

Program

Kaiser Permanente called on the Los Angeles firm of Frank R. Webb Architects to transform architectural dross into a humane office environment fit for 24/7 occupation. At less than $100 per square foot, the budget was restrictive and demanded conventional building materials and considerable ingenuity.

Solution

Principal Frank Webb, AIA, and project designer Ken Stein, AIA, looked inside the ungenerous box for an architectural point of departure. Above the suspended ceiling on the first floor they found it in the form of coffered concrete ceilings, supported by columns with formerly concealed monumental conical capitals worthy of Karnak. Although the second floor did not have the same architectural heft—there the structure changed to thin steel columns supporting tapered steel girders—they decided to expose the heroic concrete structure, with loftlike interiors open to the ceilings.

If the architectural idea came from within the building, the parti grew out of the paved path leading from the parking area to a new entrance, heralded by an airfoil canopy erupting out from the east facade. The path continues inside along a south axis leading straight through the building to the front guest entrance on the west side, housed in a handsome pavilion that was the only architectural artifact worth saving from the original building. The architects enhanced its de Stijl–style composition by adding more planes and an airfoil canopy.

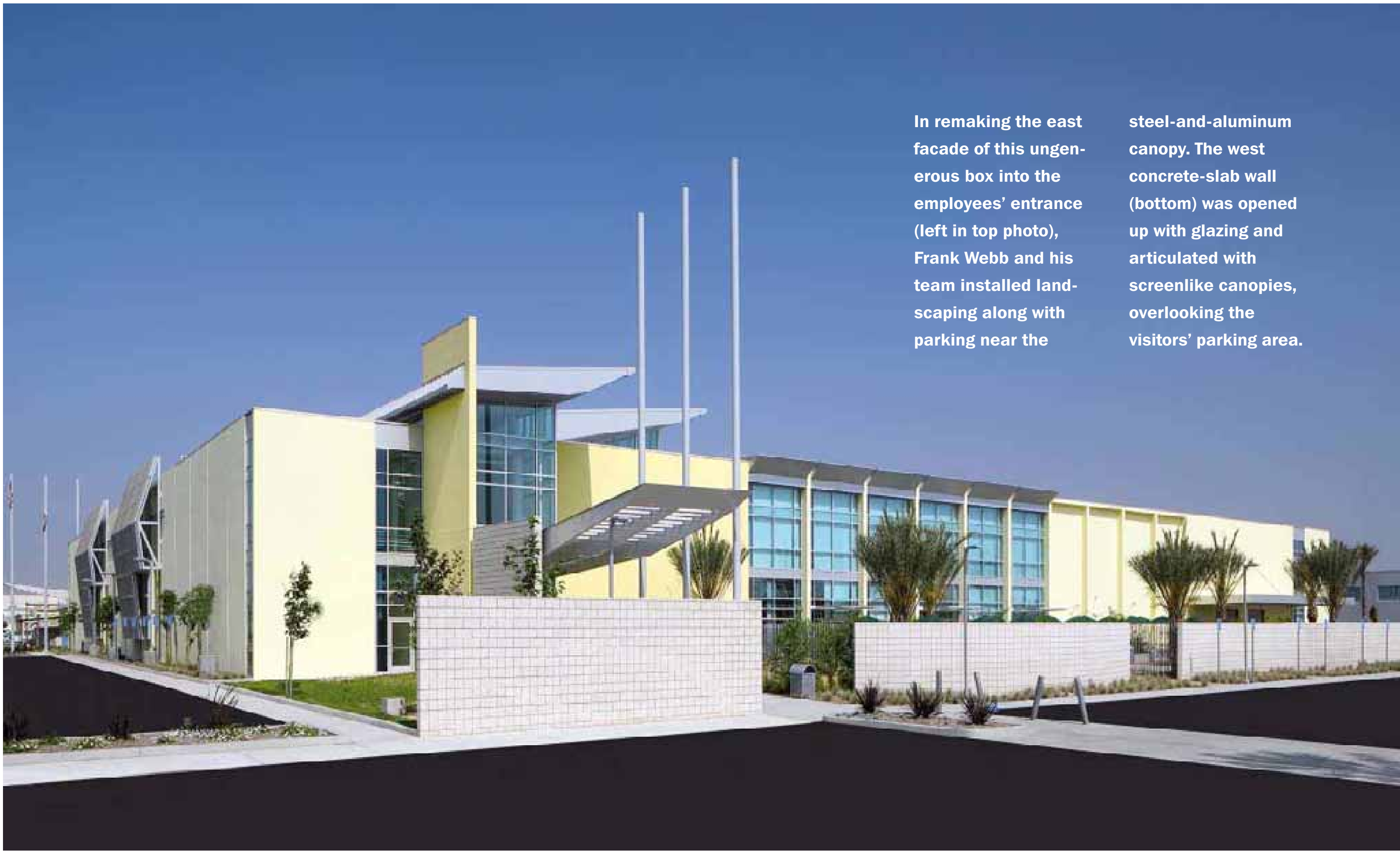
The pedestrian street between the two entrances sets off an asymmetry that alleviates the rote symmetries of the original shell, which the architects sustain in the fortress of the right angle by slashing a diagonal path across the floor, much like Broadway plowing through the New York City grid.

They also burst through the box vertically: At the employees' entrance, the architects carved a two-story interior courtyard that rises through the height of the building, breaking through the original roofline so that natural light floods the space via new clerestory windows. In this atrium, employees are brought together by the elevators, a monumental staircase that angles through the middle of the space, and an adjacent cafeteria.

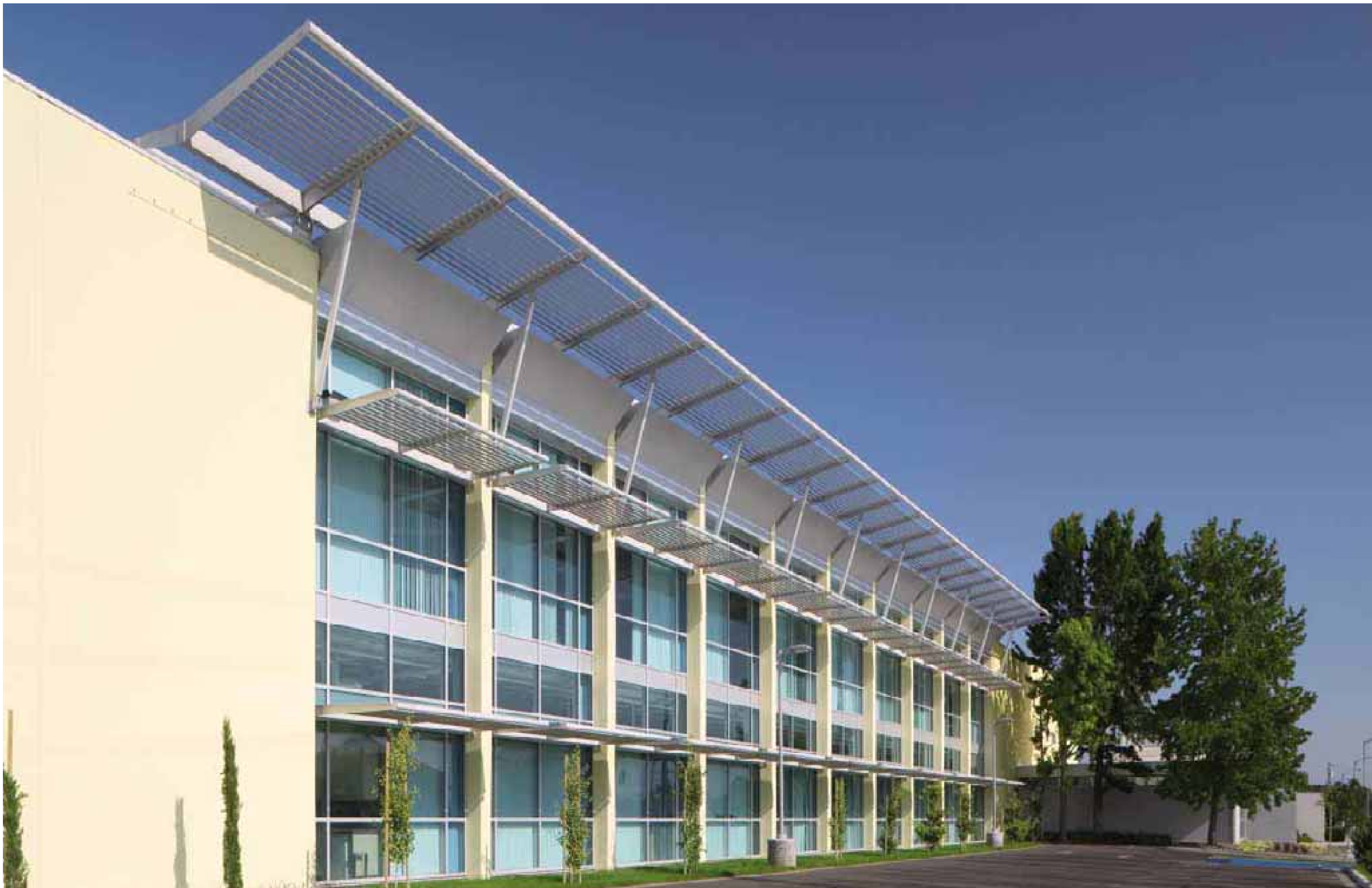
By revealing the columns and coffered ceiling, Webb and his team used the existing tectonics to organ-

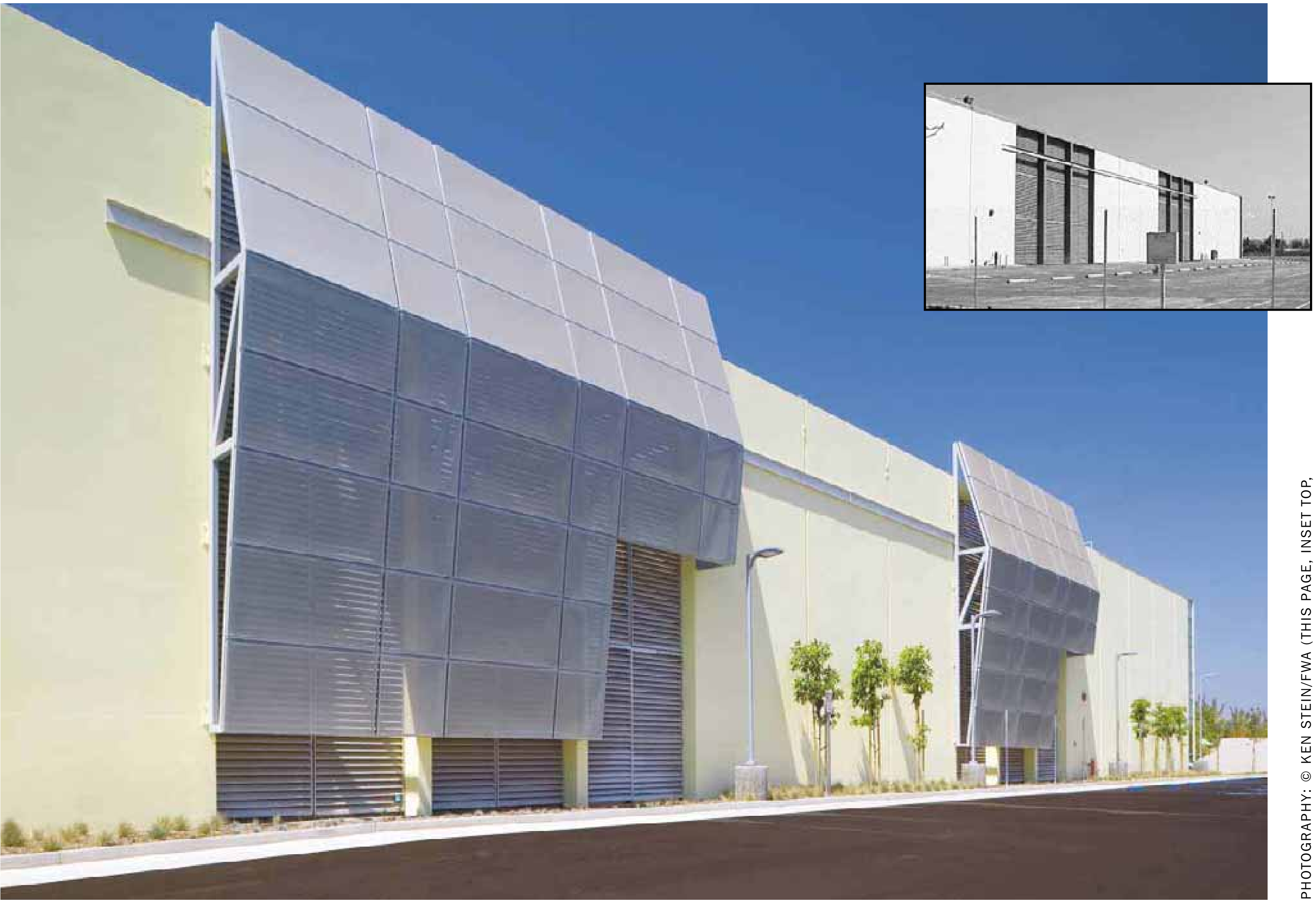
Joseph Giovannini, a critic, has a New York-based design practice.

PHOTOGRAPHY: © FRED DALY ARCHITECTURAL PHOTOGRAPHY, EXCEPT AS NOTED; KEN STEIN/FWA (THIS PAGE)



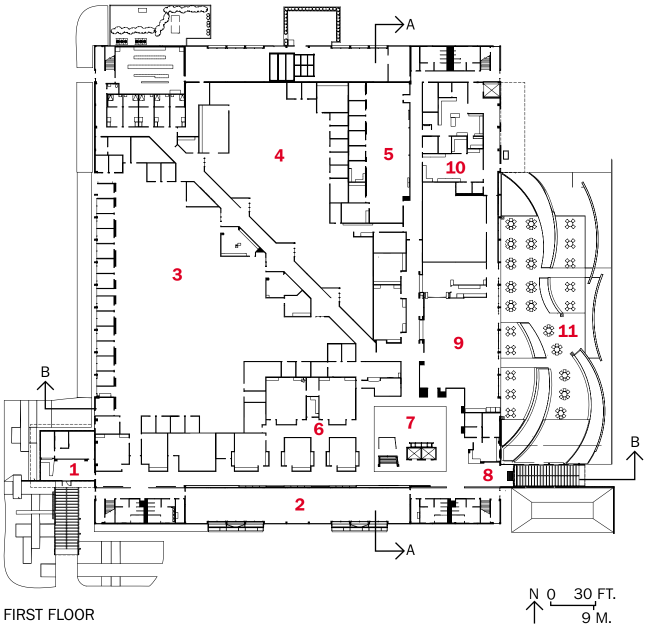
In remaking the east facade of this ungenerous box into the employees' entrance (left in top photo), Frank Webb and his team installed landscaping along with parking near the steel-and-aluminum canopy. The west concrete-slab wall (bottom) was opened up with glazing and articulated with screenlike canopies, overlooking the visitors' parking area.



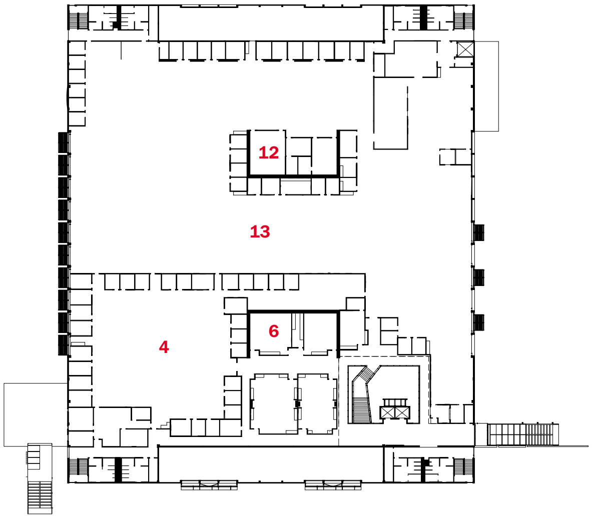


PHOTOGRAPHY: © KEN STEIN/FWA (THIS PAGE, INSET TOP, AND OPPOSITE, INSET MIDDLE RIGHT)

The south side of the building, once concrete with louvers (inset), is now given a sculptural depth with steel panels over a steel frame. Behind it is an open-air mechanical yard that parallels a long east-west pedestrian street inside.

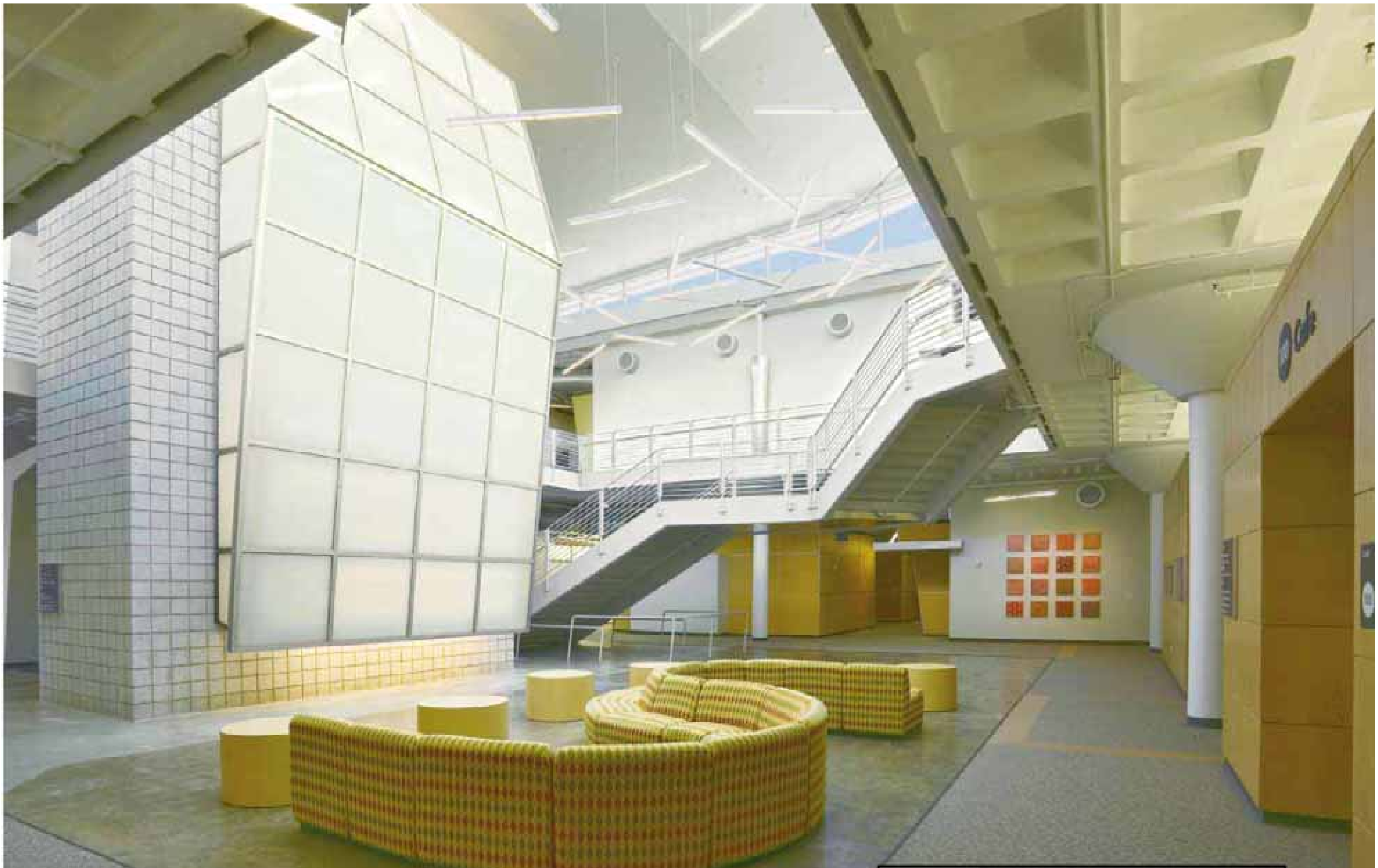


FIRST FLOOR



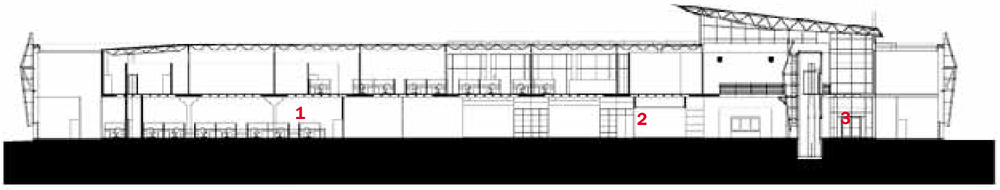
SECOND FLOOR

1. *Visitors' entrance*
2. *Mechanical yard*
3. *Case coordination center*
4. *Pharmacy*
5. *Medical transport*
6. *Conference area*
7. *Atrium*
8. *Employees' entrance*
9. *Café*
10. *Facilities*
11. *Employee courtyard*
12. *Training*
13. *Claims center*

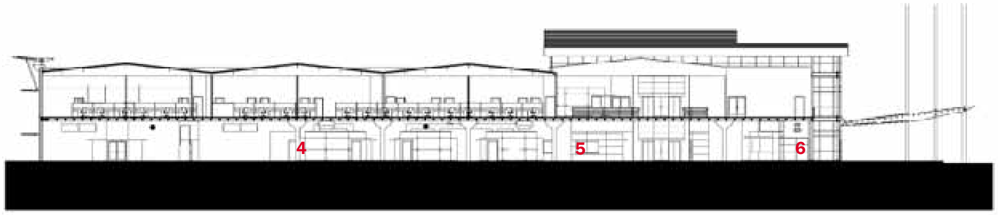


1. *Medical transportation center*
2. *Café*
3. *Atrium*
4. *Case coordination center*
5. *Conference center*
6. *Employee entrance*

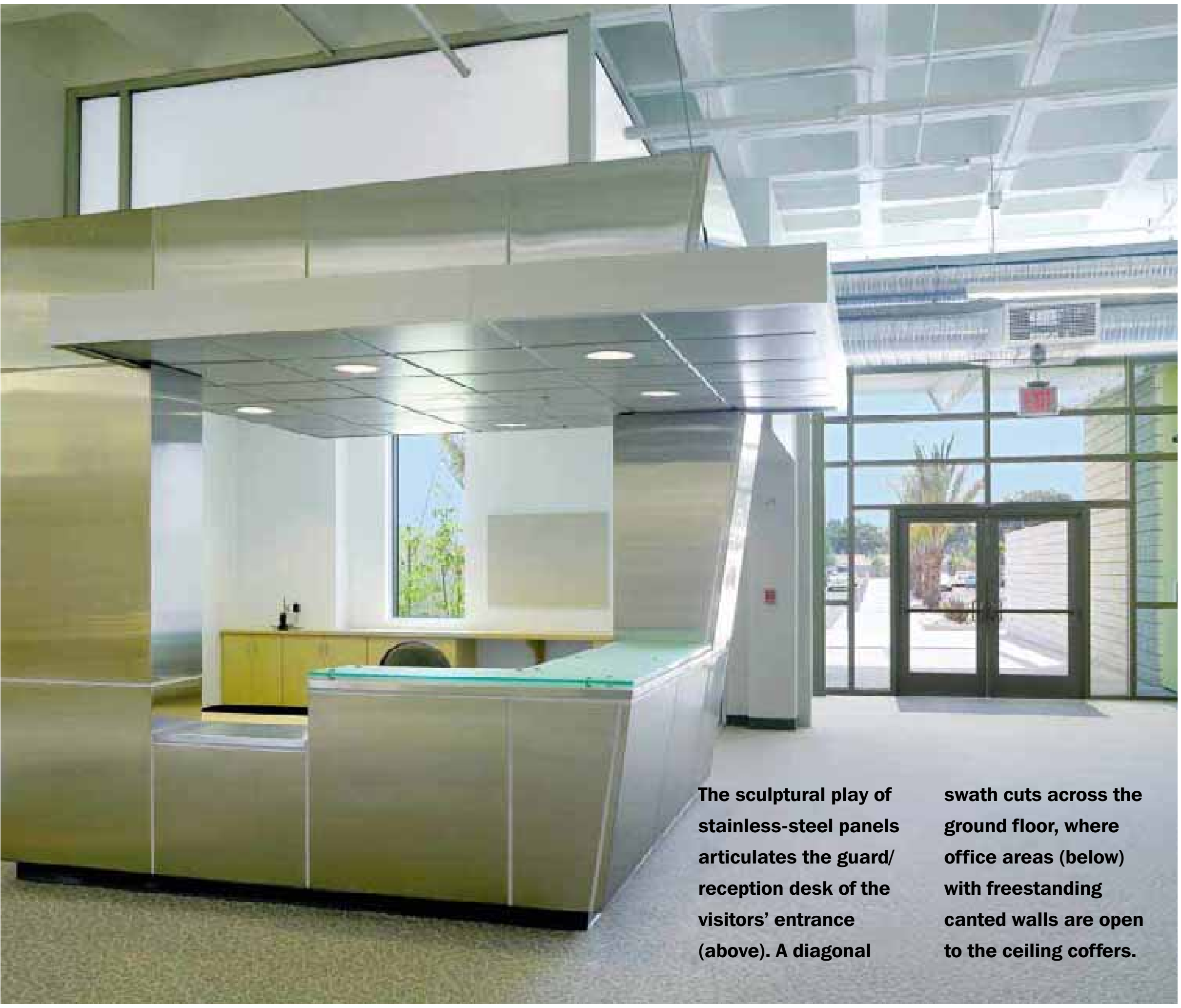
The cavernous structure concealed its concrete coffered ceiling and its Karnak-like capitals over the concrete columns (right). The architects exposed the structure, and created a two-story lobby (above and below right).



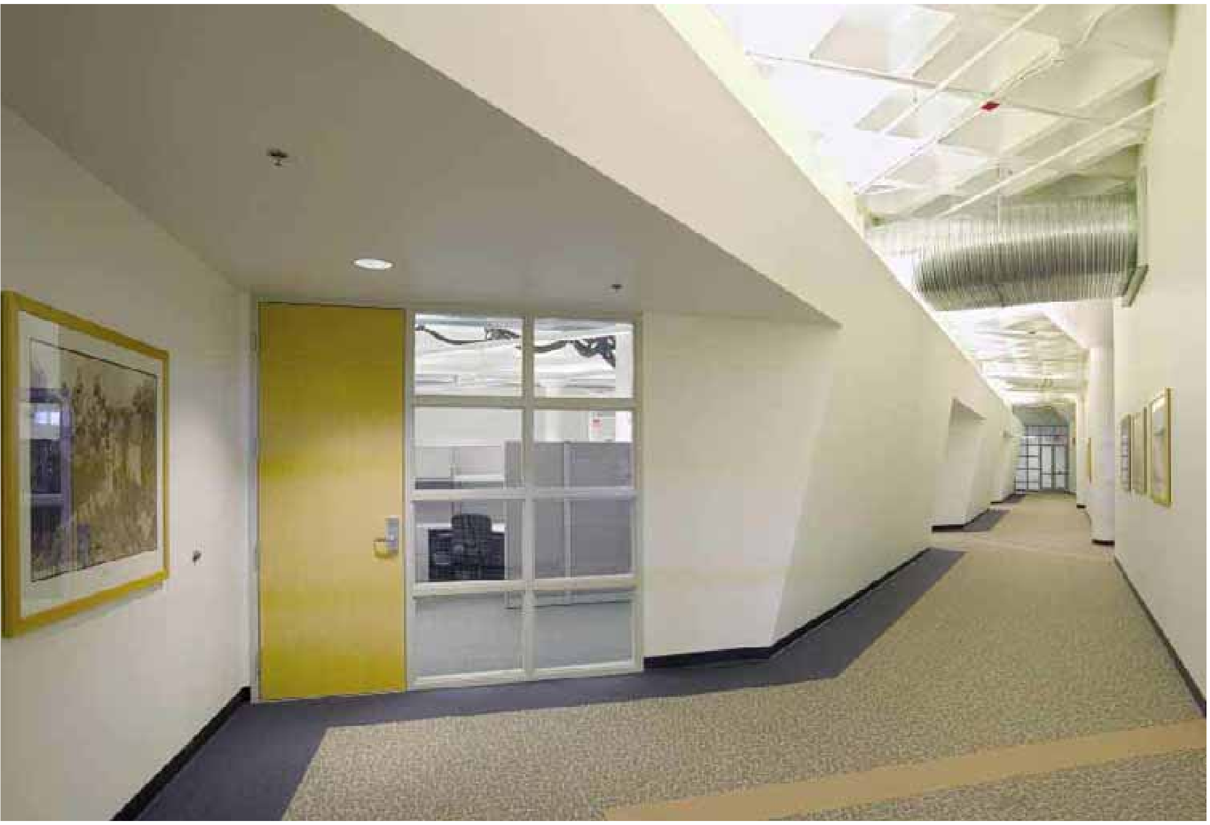
SECTION A-A



SECTION B-B



The sculptural play of stainless-steel panels articulates the guard/reception desk of the visitors' entrance (above). A diagonal swath cuts across the ground floor, where office areas (below) with freestanding canted walls are open to the ceiling coffers.



ize the plan—the columns mark the space around which the architects placed conference rooms and offices on the vast floors. Passages expand and contract as these offices and conference pavilions grip and release the interior streets. These small structures within the larger one create a village scale, catalyzing the open-office field with a lively interior urbanism.

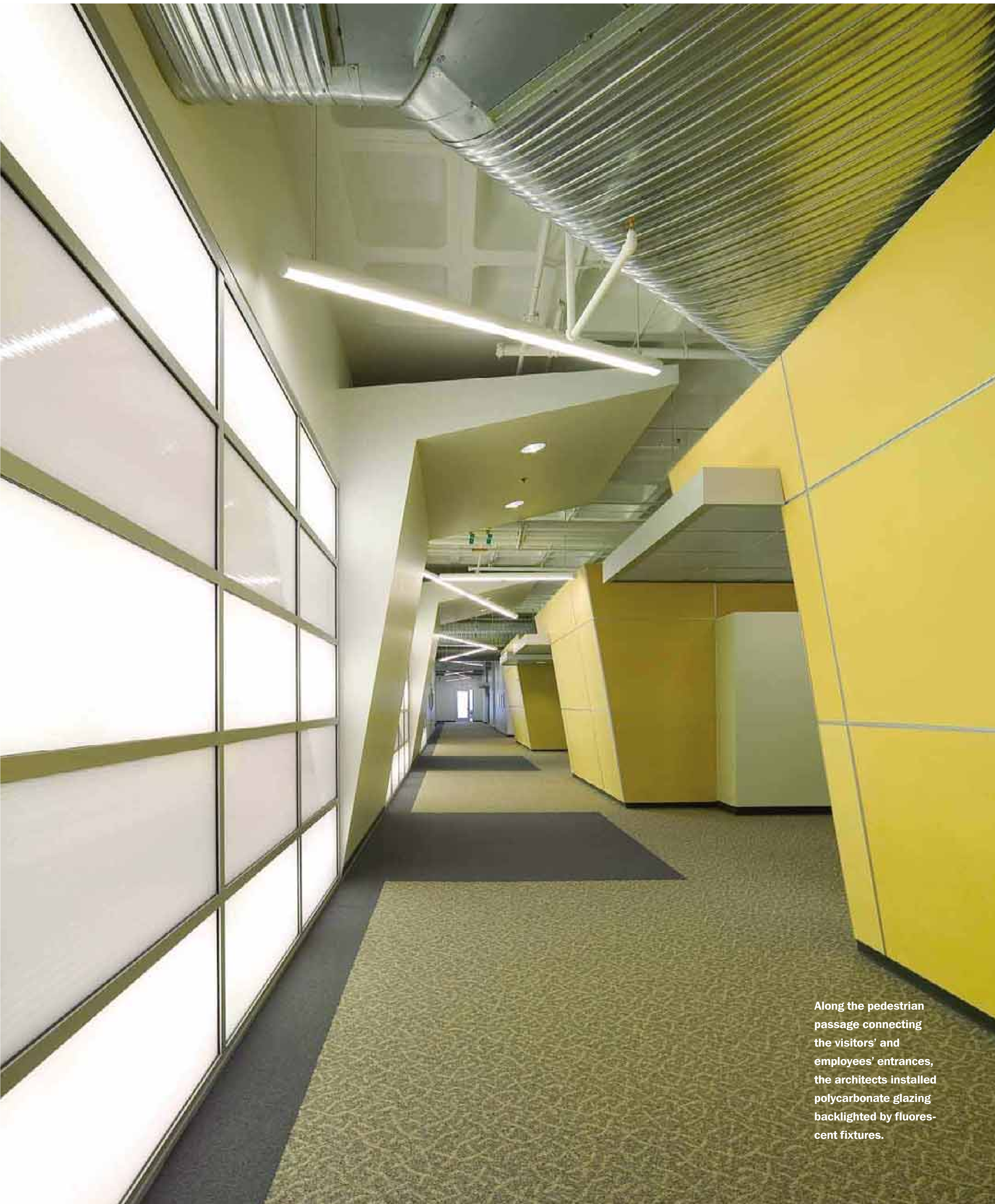
Some of the conference rooms are articulated to become objectlike pavilions—the browed entries, canted walls of the facades, and joinery of the concrete-board fascia confer to each an individuality that counteracts the universality of the original structure. In addition, the architects kept the ceilings of the conference rooms and offices low, to give an intimate scale to the tall spaces, and to let natural light flow in clerestory cavities below the waffle ceiling.

The removal of concrete wall slabs between the structural piers at the building's edge permits generous amounts of natural light to enter the open-plan offices. In order to modulate the sunlight, the designers retrofitted sun shields, shaped again as airfoils, on the front and back facades. Inside and out, such architectonic pieces give depth and shade to the flat wall planes.

Commentary

Despite the limiting budget, the architects seized every opportunity to enrich a building that by every measure was impoverished. But what gives the design the additional edge is the energizing angularity of the geometry that comes from the parti introduced into this inert, uninflected space. On both floors, even the entire ceiling of fluorescent lights is shifted at 45 degrees to the floor plan. Walls lean and dropped-ceilings rise, as though taking off.

Deft, space-defining formal moves endow the building with an aesthetic of energy that charges formerly passive spaces. Now that the building houses a health-care company, it expresses flight in a way never achieved in its original incarnation. The architects brought energy to space. ■



Along the pedestrian passage connecting the visitors' and employees' entrances, the architects installed polycarbonate glazing backlighted by fluorescent fixtures.

The Barn at Fallingwater

Mill Run, Pennsylvania

2

BOHLIN CYWINSKI JACKSON EMPLOY CREATIVE RENOVATION ON AN OLD BARN USED BY THE WESTERN PENNSYLVANIA CONSERVANCY.

By James Murdock

Architect: *Bohlin Cywinski Jackson—John C. Jackson, AIA, principal; Roxanne Sherbeck, AIA, design manager; Sarah Drake, AIA, project manager; Michael Gwin, Li Chuin Toh, Maria Velisaris, Kai Vern Tang, Jarrett Pelletier, design team*
Client: *Western Pennsylvania Conservancy*
Engineers: *Atlantic Engineering Services (structural); H.F. Lenz (m/e/p)*
Consultants: *Marshall Tyler Rausch (landscape architects)*
General contractor: *Clearview Project Services*

Size: *12,000 square feet on 5,000-acre site.*
Cost: *Withheld*
Completion date: *2003*

Sources
Parallel strand lumber framing members: *Trus Joist/Weyerhauser (Parallam)*
Wood and glass windows and doors: *Marvin*
Strawboard panels: *BioFab*
Sunflower seed biocomposite panels for cabinets and paneling: *Phenix Biocomposites*
Interior ambient lighting: *Zumtobel; Spero Electric*

For more information on this project, go to Building Types Study at **www.archrecord.com**.

Although its name might suggest a closer physical relationship, the Barn at Fallingwater is located a quarter of a mile up the road from Frank Lloyd Wright's 1937 masterwork. Visually, the barn is also somewhat removed from Wright's aesthetic—the Western Pennsylvania Conservancy, a nonprofit that owns both buildings, stipulated as much when commissioning the barn's transformation—but nonetheless, they do bear a resemblance. Both Fallingwater and the revamped barn are at one with nature: one through design, the other through materials.

Program

The conservancy maintains more than 5,000 acres of land adjacent to Fallingwater. Although it occupies offices on-site and in Pittsburgh, the organization needed more desk space and meeting rooms. It also wanted exhibition space and a retail shop that would be visible from the main county road.

At first, the conservancy thought only a new building could accommodate these needs. But since the group seeks to protect natural landscapes, and the staff felt uncomfortable with new construction, it decided to convert a nearby storage barn instead.

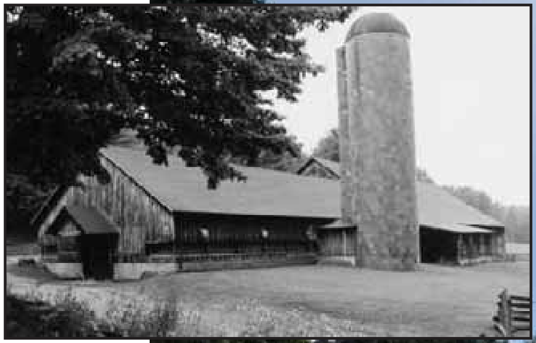
The Barn at Fallingwater is actually two structures set into a hillside: a large, two-level building dating from circa 1870, and a smaller, single-story addition from the early 1940s. Since barns are associated with the rural landscapes that are disappearing across Pennsylvania, the conservancy decided to restore this barn's iconic silo.

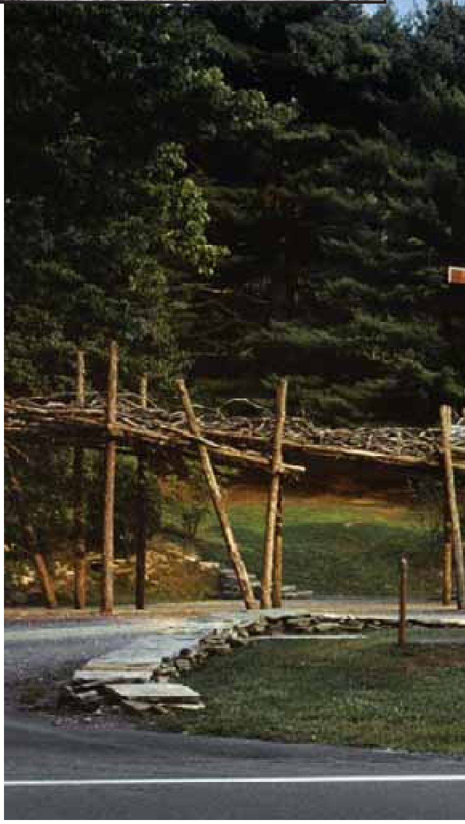
Solution

Bohlin Cywinski Jackson struggled with how to make use of the older barn's main space, a 5,000-square-foot room, with its primary entrance at the rear because of the grade change. Architects from the Pittsburgh office, Roxanne Sherbeck, AIA, and Michael Gwin, AIA, considered placing the retail shop on this level, but abandoned the idea since it would entail adding a bulky entry on the front elevation. Fortunately, the conservancy wasn't committed to a shop.

At this point, the architects had a revelation: just leave the big space untouched, preserving its barnlike character with unfinished, uninsulated wallboards that allow air and light to circulate freely. Such a decision meant the conservancy could rent out the space for weddings, conferences, and other events, bringing a windfall in income to the organization. The architects excavated its lower level for administrative offices and storage. Meanwhile, the smaller

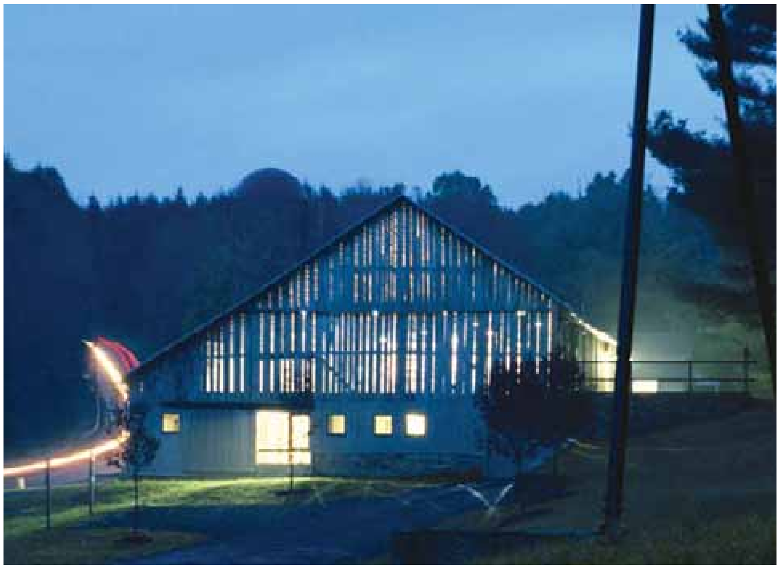
James Murdock writes about architecture from New York City.

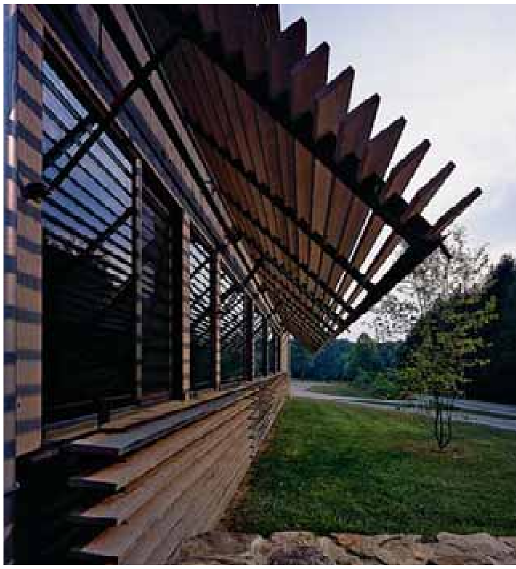


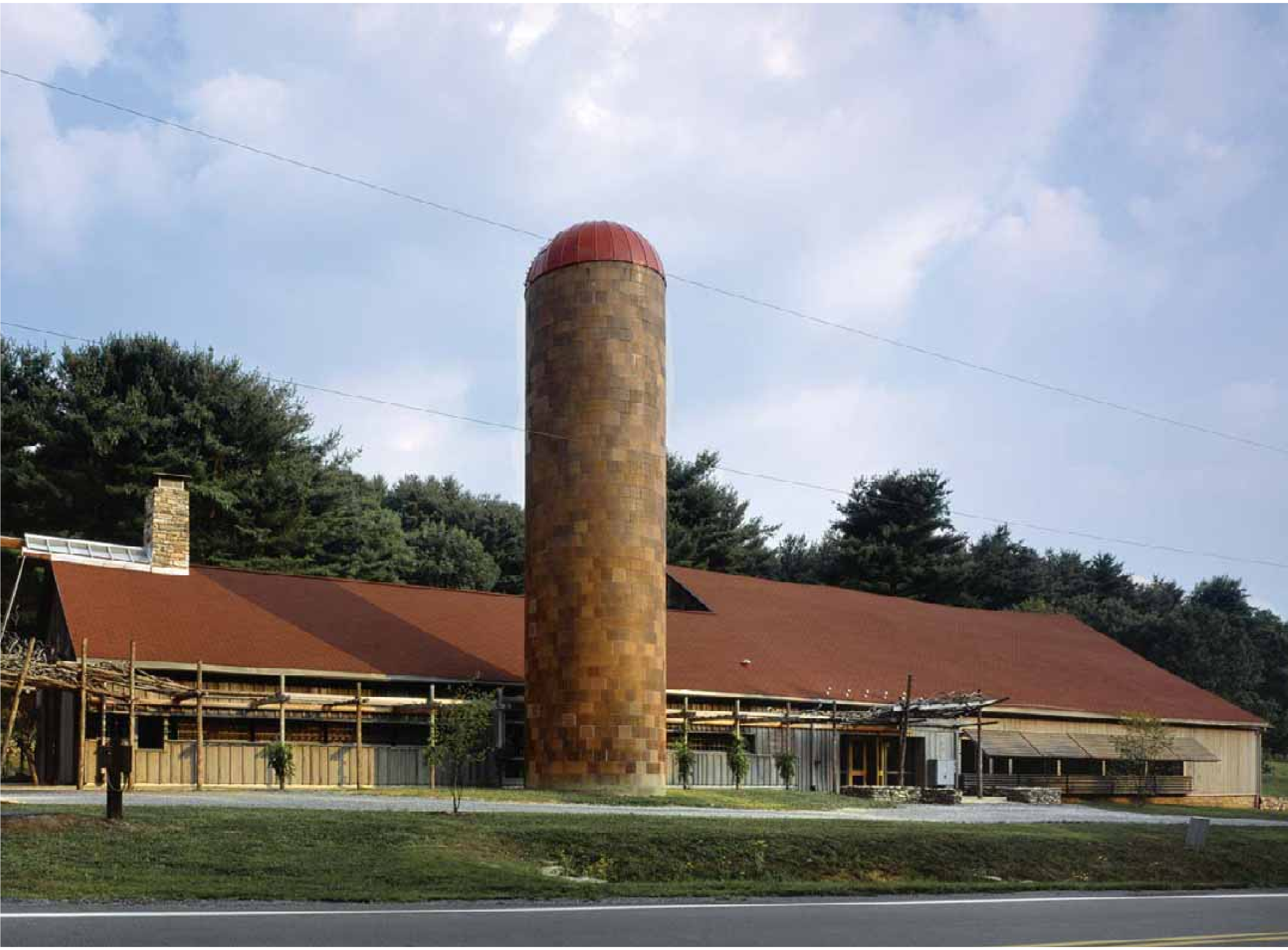


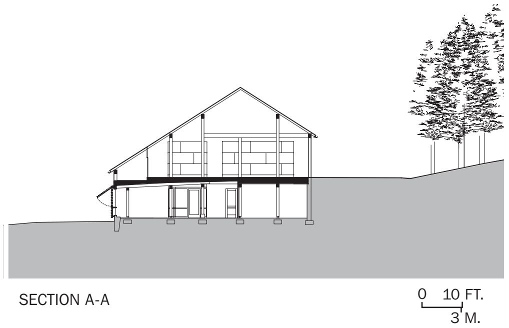
PHOTOGRAPHY: © NIC LEHOUX, EXCEPT COURTESY THE ARCHITECTS (THIS PAGE, INSET)

A barn built around 1870 (opposite, inset) and a 1940s addition have been transformed into offices and a meeting center for the Western Pennsylvania Conservancy. Located close to Frank Lloyd Wright's Fallingwater at Bear Run, much of the original structures' volumes remain intact (right). The architects added adjustable wood louvers on the west elevation (far right), and a trellis to shelter the front walkway (below).

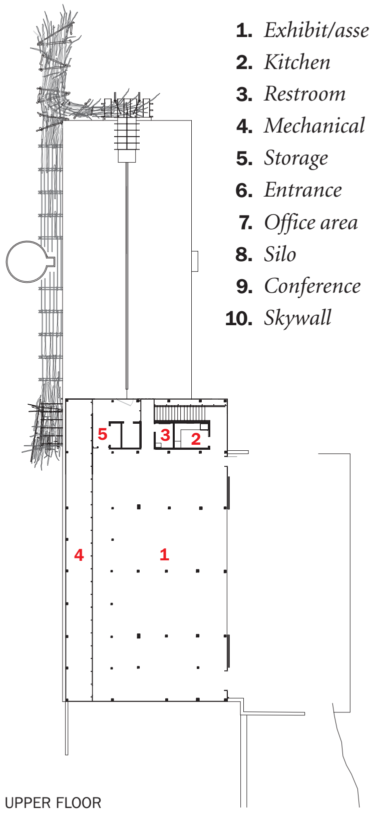


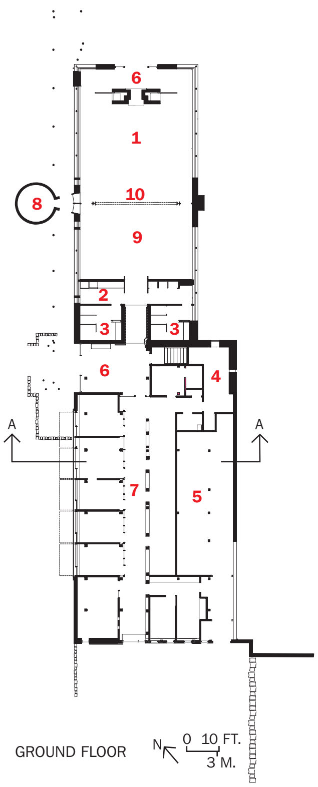


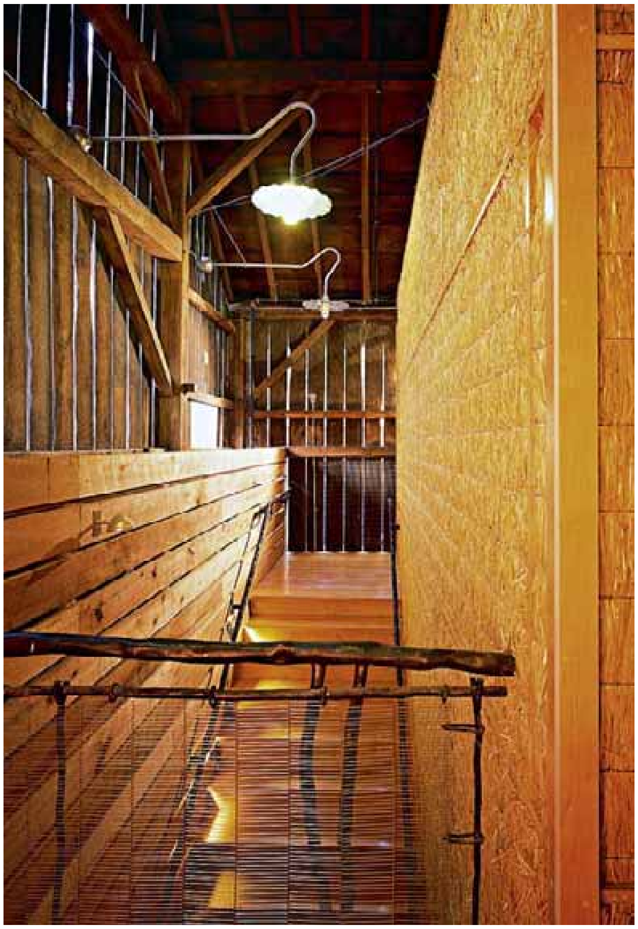


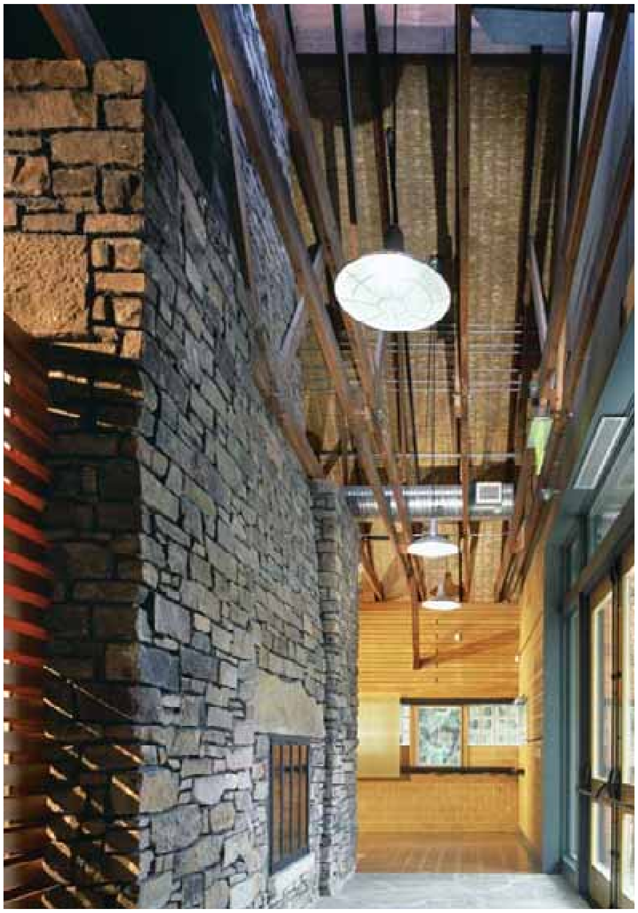


1. *Exhibit/assembly*
2. *Kitchen*
3. *Restroom*
4. *Mechanical*
5. *Storage*
6. *Entrance*
7. *Office area*
8. *Silo*
9. *Conference*
10. *Skywall*









In order not to destroy the character of the main barn's upper loft space (opposite), with its heavy timber, mortise, and tenon frame, the space was left raw, with natural light admitted through gaps in the vertical siding. Fireproof straw bale panels (left) line the stair, and local fieldstone was used to create a large fireplace wall in the 1940s addition (bottom).

addition, formerly a dairy barn, now contains meeting rooms that can double as an exhibition hall.

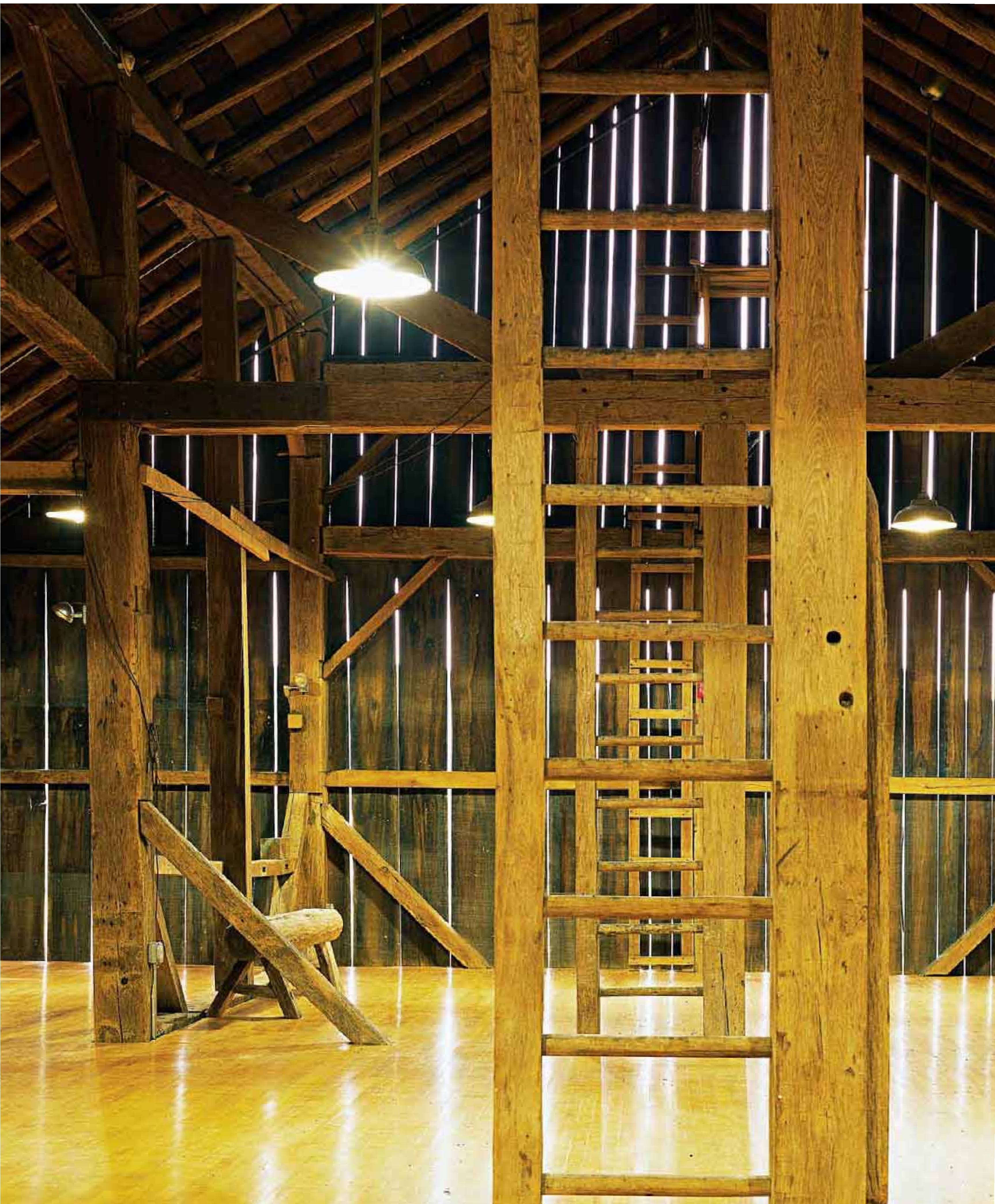
Ecofriendly elements throughout the Barn at Fallingwater earned it an AIA/COTE Green Project Award, and it is expected to receive LEED Silver certification. For example, wall paneling consists of 2-inch-thick straw bales, while maple flooring in the big barn was salvaged from a demolition job. Other features include geothermal wells and a zero-discharge wastewater-treatment plant.

Commentary

Once considered a problem, the unprogrammed large space is now the project's selling point. The room's four oversize doors are opened during warm months, effectively dissolving its eastern wall. Even on rainy days, light filters through gaps between the boards, bouncing off the glossy floor and suffusing this space with a transcendental glow.

An eclectic material palette in the meeting rooms also preserves the feel of a barn. The contractor reused cedar planks, moving them from the ceiling to the walls, and uncovered glazed terra-cotta wainscoting, a remnant of the space's past life as a milking facility.

Due to a prosaic choice of materials, the administrative offices are the only insertion that feel alien to the barn aesthetic. Happily, the architects softened the exterior impact of new windows by adding a screen of wood louvers. But they overreached when designing a trellis for the front walkway. Made of mountain laurel branches, it will eventually be covered by vines. For now, though, the trellis takes the green concept a step too far and feels forced. ■



Local Union 580

Long Island City

3

DANIEL GOLDNER ARCHITECTS DEFTLY ORCHESTRATES AN ASSEMBLAGE OF METALS IN A BUILDING RENOVATION TO SIGNIFY A UNION'S IDENTITY.

By Suzanne Stephens

Architect: *Daniel Goldner Architects—Daniel Goldner, principal; Davis Iszard, project executive; Ashley Wilson, project architect; Jimmy Counts, project manager*
Client: *Ironworkers Local 580: Apprentice and Training Facility*
Engineers: *Wexler and Associates (structural); John Guth Engineering (m/e/p)*

Size: *18,000 square feet*
Cost: *Withheld*
Completion date: *2004*

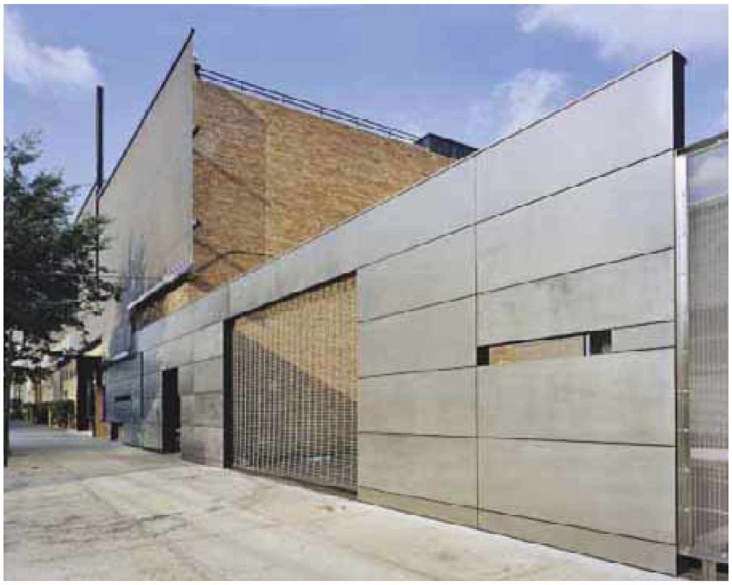
Sources
Stainless-steel-mesh screen: *GKD*
Resin-laminated glass: *Rudy Art Glass*
Structural glass: *Depp Glass*
Interior acoustical and suspension-grid ceiling: *Armstrong*
Custom metal paneling, windows, entrance doors, and entrance-door pulls: *Empire Architectural Metal*
Paints and stains: *Benjamin Moore (interior paints); Carboline (fire-rated intumescent paint over steel columns)*

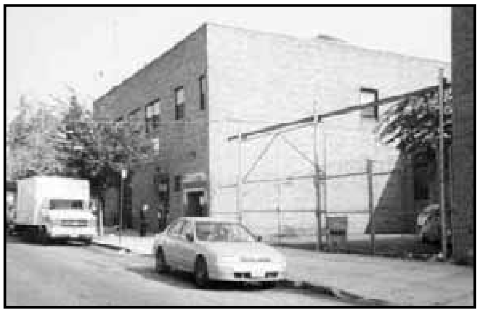
For more information on this project, go to Building Types Study at **www.archrecord.com**.

Long Island City, Queens, may have gained an artistic aura by being the home of P.S. 1 Contemporary Art Center, the Museum of the Moving Image, and the Noguchi Museum, among others. But much of the area is littered with dreary, low-rise masonry structures devoted to light industry and related enterprises. Nevertheless, Ironworkers Local 580: Apprentice and Training Facility (for ornamental and architectural ironworkers) shows how a renovation can artfully change that tone.

Program

In transforming a scuzzy medical-supply storage facility with a setback brick garage into the 18,000 square feet of classrooms and workshops, the union leaders wanted to signify the value of their craft through the design of the facade and the public spaces. They didn't have to look far: Daniel Goldner Architects, based in Manhattan, had remodeled a nearby building for two structural-ironworker unions in a clean, planar mode evocative of the International Style. In the case of Local 580, it encouraged Goldner to make use of a range of metals to fully emphasize the union's particular craft.

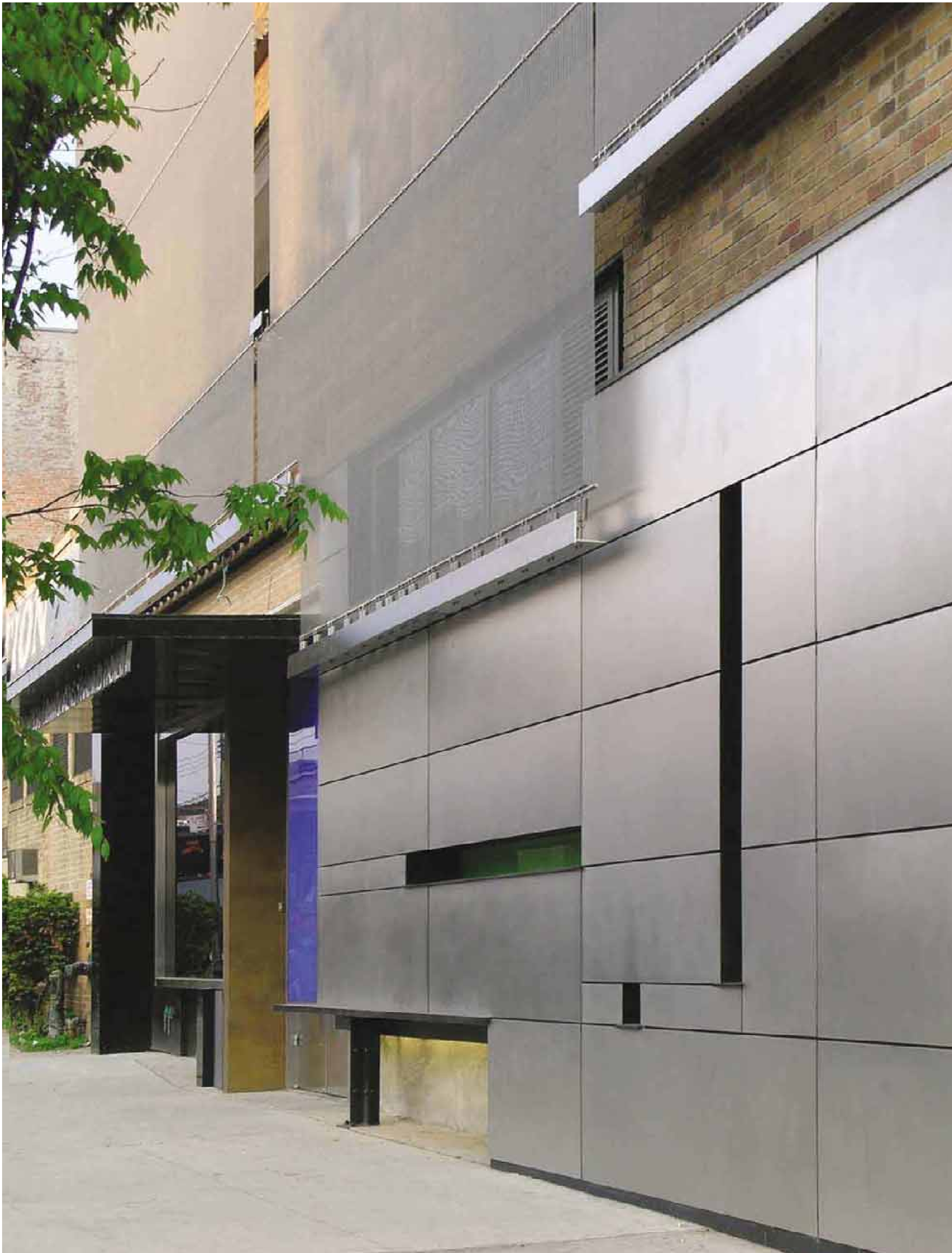




The brick facade and parking court (left) was covered in a grid of bead-blasted stainless-steel panels with Z-clip reveals (above). A stainless-steel-mesh screen is hung from the second-story roof (opposite).

Solution

Goldner and his team gave the facade, entrance lobby, and stairway the full-metal-jacket treatment, in addition to revamping the steel-framed interior for a workshop, an adjoining welding shop, and classrooms inserted in the basement. With the new facade, Goldner left most of the brick exterior wall intact (infilling places with concrete block). Over that he designed an outer carapace of assorted 3⁄16-inch-thick metal panels at the ground floor—an articulated assemblage of bead-blasted stainless-steel (with a soft luminous sheen), pearlized stainless-steel doors, and oxidized steel at the north end—plus an etched-brass pylon. This Modernist composition, limned by reveals and shallow volumes pulled out from the brick backdrop, is further dramatized by slotlike horizontal and vertical windows incised into the



PHOTOGRAPHY: © DAVID JOSEPH, EXCEPT COURTESY ARCHITECTS, LEFT PAGE BOTTOM planes and filled with lime-green, cobalt-blue, and yellow tinted glass.

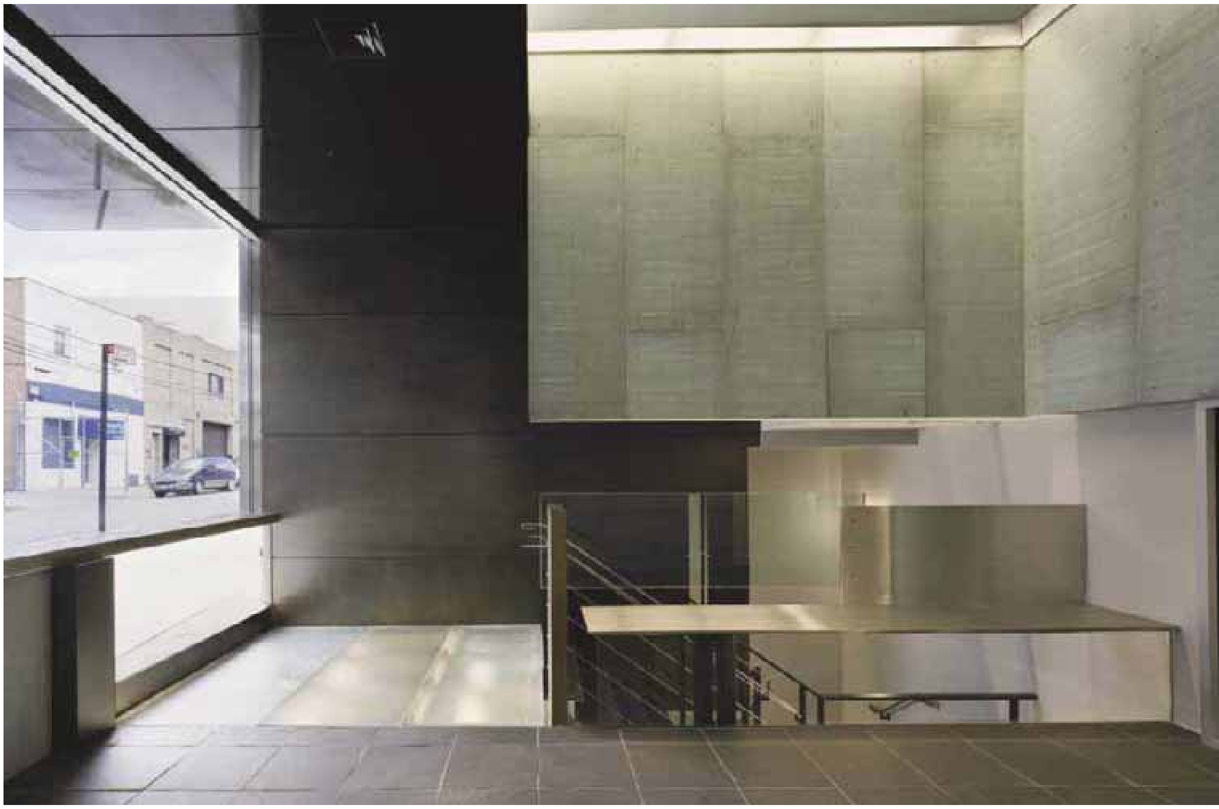
At the roof line, Goldner hung a 27-foot-high, stainless-steel-mesh screen and clipped it in place over the second floor. Viewed at an angle, the screen appears opaque; dead-on it subtly discloses the brick wall behind it. To underscore this revealing-by-concealing approach, Goldner stopped the screen above the metal panel base in certain areas so that unadorned glimpses of the brick wall remain on view. The screen also allows the second floor, used as rental space, to receive natural light through existing windows.

An aluminum canopy with a painted black soffit continues into the lobby at an 11-foot height, slightly compressing space in the 13-foot-6-inch-high area. Anchored by the black slate floor, the dramatic interplay of steel, brass, glass, and prepatinated copper planes accentuates the dimensions of this small, cubiform hall. On the lower level, another lobby receives natural light through the glass floor above and in turn opens onto trimly designed corridors and classrooms.

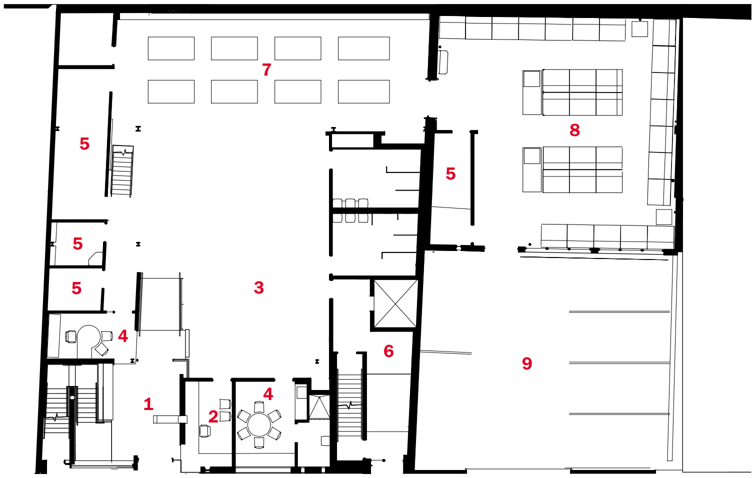
Commentary

Granted, the actual classrooms and workshops inside the building lack the design drama of the facade and the public spaces. However, the latter carry the day, especially as an urbanistic gesture. If only similar renovations would follow suit. For the moment, Goldner's efforts stand out as a visual surprise against the dreary backdrop of moldering industrial buildings.

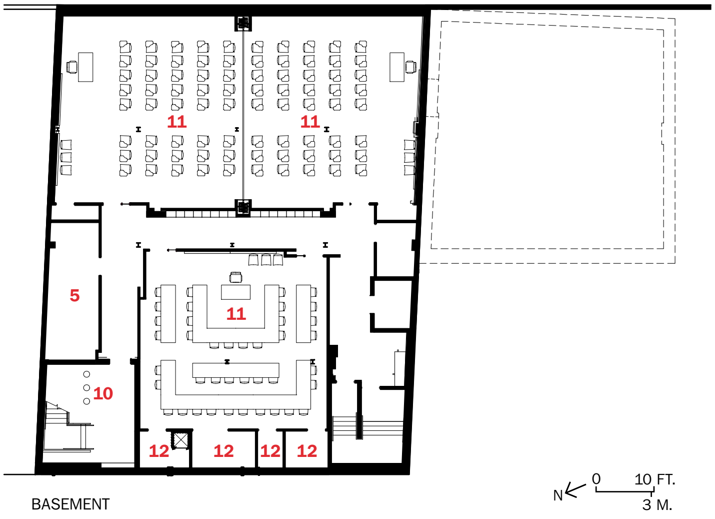
The renovation obviously succeeds in advertising the possibilities of the ornamental- and architectural-metal workmanship the union is advancing. Moreover, it reaffirms one's faith in the effect of architecture on everyday places. Goldner has shown that craft and material, combined with proportional and compositional sophistication (not surprisingly, he used to work for Edward Larrabee Barnes) can go far in improving the urban landscape—even if it is step-by-step. ■



In the first-floor lobby (above), a stainless-steel bench seems to float over structural glass. It hooks into the low brass partition that engages the luminous, textured-glass floor of the stair landing. Above the bench, prepatinated copper panels define the lobby space.

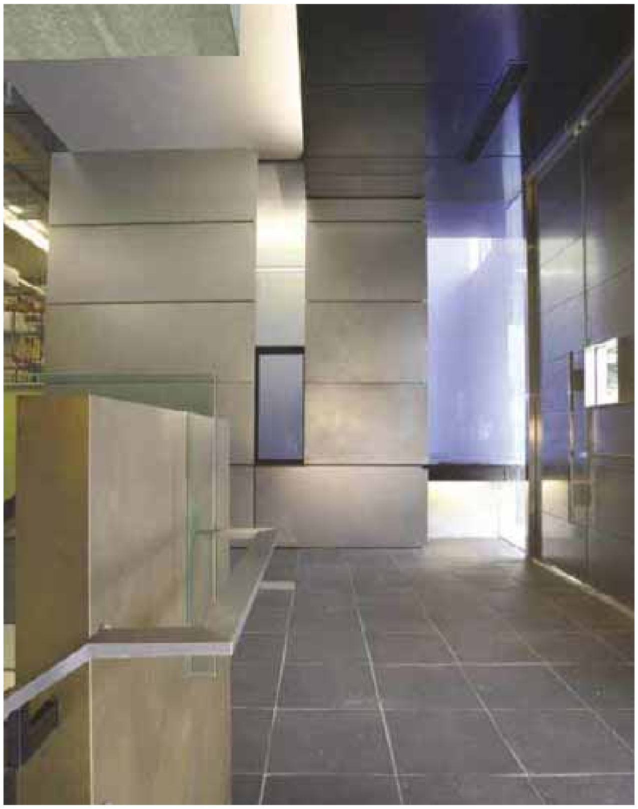


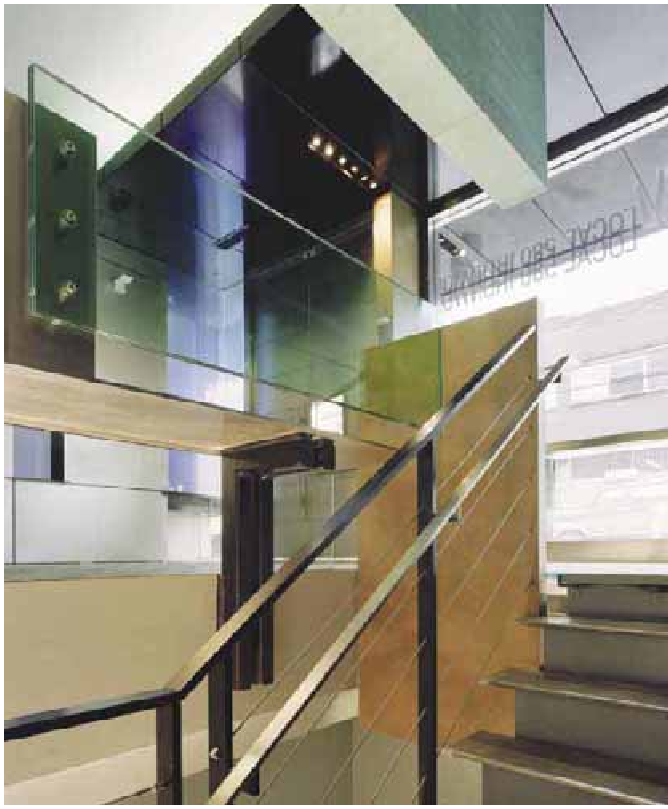
FIRST FLOOR



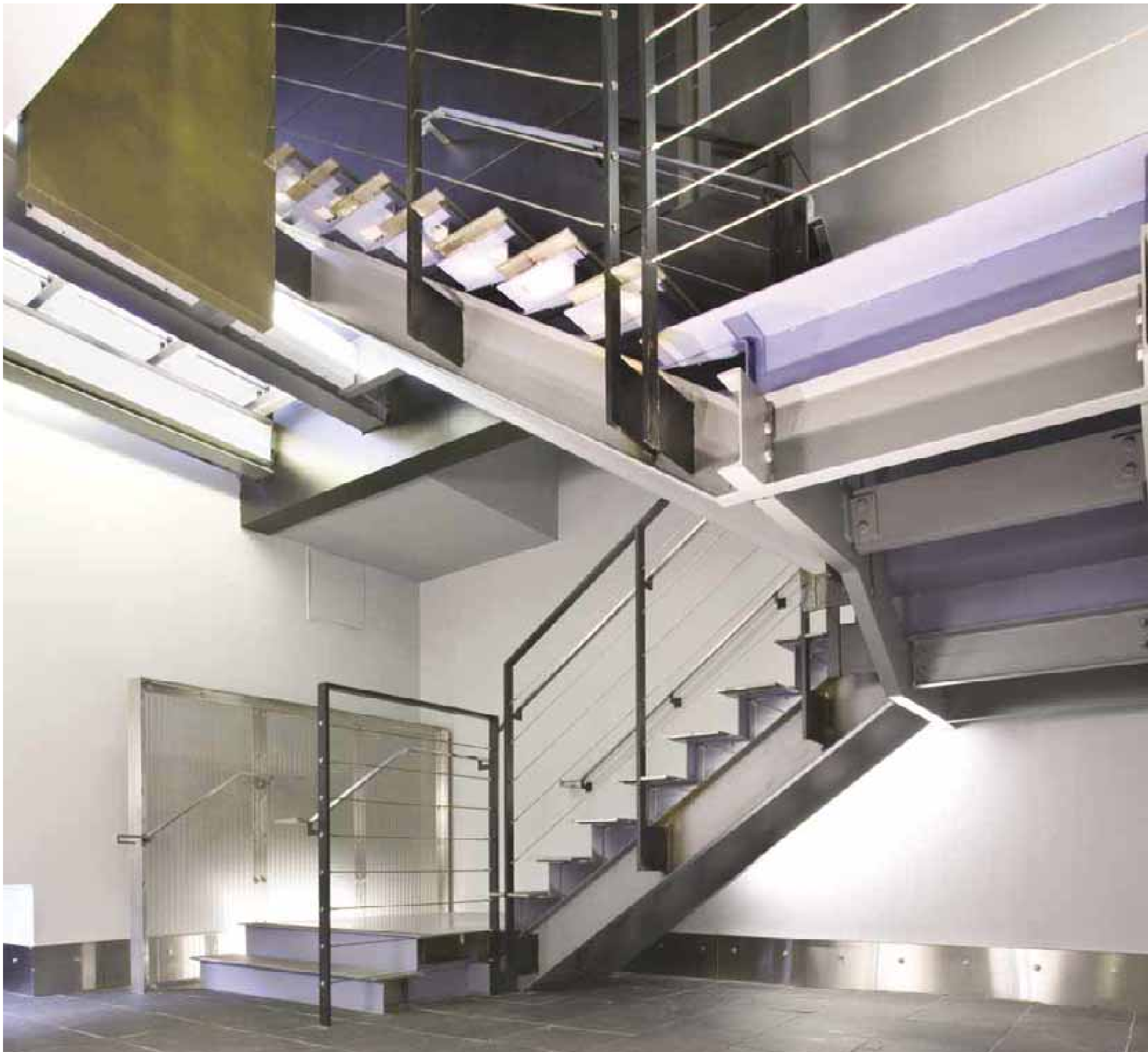
BASEMENT

1. *Lobby*
2. *Administration*
3. *Workshop*
4. *Office*
5. *Storage*
6. *Tenant entry*
7. *Burning tables*
8. *Welding room*
9. *Parking*
10. *Lower-level lobby*
11. *Classroom*
12. *Mechanical*





An administration office with tinted, resin-laminated glass adjoins the lobby (above left), where the dark slate floor echoes the tone of the black-painted aluminum soffit of the canopy extension. Stainless-steel treads, lightly poised on the structural-steel spine of the stair (above right), lead down to the classroom area (right), where the lobby receives natural light filtering through the glass floor above.



Masanari Murai Art Museum
Tokyo, Japan

4

KENGO KUMA HAS GIVEN A NEW MEANING TO THE TERM "EXTREME MAKEOVER" WITH HIS TRANSFORMATION OF AN ARTIST'S HOUSE.

By Naomi R. Pollock, AIA

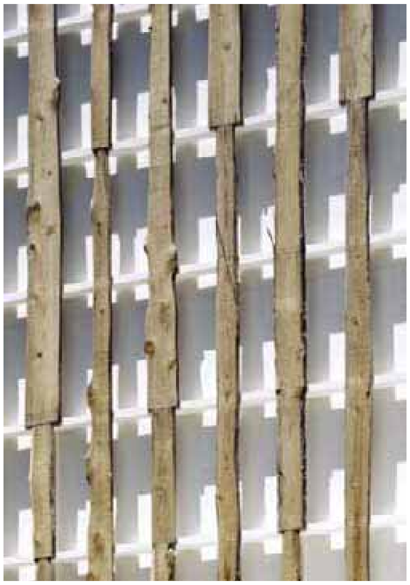
Architect: *Kengo Kuma & Associates—Kengo Kuma, principal; Kenya Hara, graphics*
Client: *Itsuko Murai*
Engineers: *K. Nakata & Associates*
General contractor: *Matsushita Industry Company*

Size: *1,761 square feet*
Cost: *Withheld*
Completion date: *2004*

Sources
Locksets: *MIWA Lock Company*
Security devices: *ALSOK Group*
Spot lighting: *iGuzzini*
Home elevator: *Mitsubishi*

For more information on this project, go to Building Types Study at **www.archrecord.com**.

It is often said that one person's junk is another's treasure. But to Masanari Murai, one of Japan's first Modern painters, everything was a treasure. "He just hated to throw stuff out," says Itsuko Murai, the artist's widow and the director of the Masanari Murai Art Museum. Moved by the beauty inherent in coffee pots, clay dolls, and countless everyday objects, the artist preferred adding rooms to parting with possessions. Instead of deaccessioning, he simply enlarged his house. Like Masanari's bold, abstract canvases, his house, with its multiple additions and voluminous contents, was a work of art. "I thought the house was chaotic, but I like that kind of chaos," says architect Kengo Kuma. However, it took the Tokyo architect's editing as well as design skills to transform this eclectic mixed-media creation into a museum.



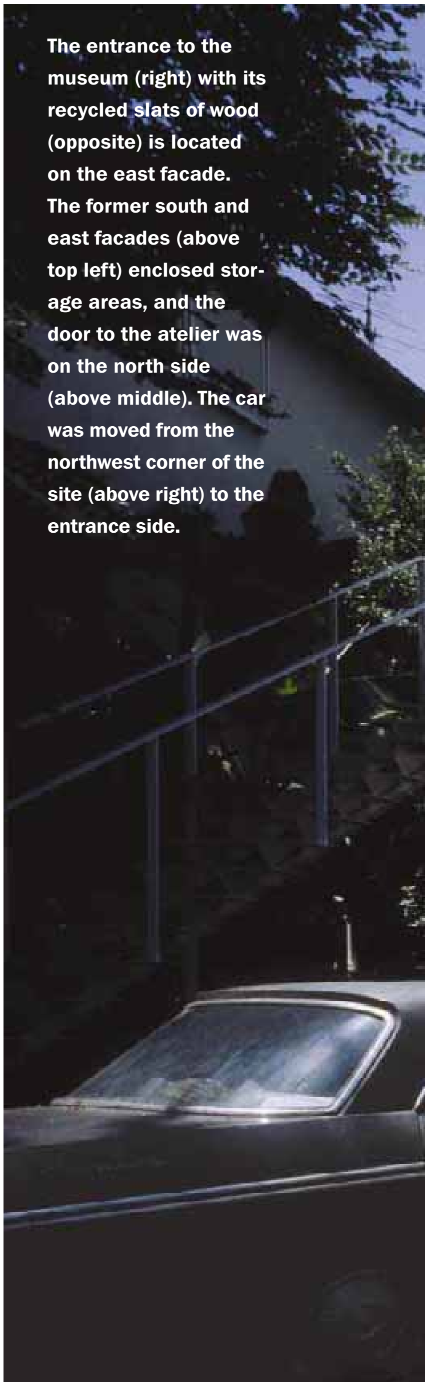
Program

When the museum was first being planned, there was talk of leaving the rambling house as it was and simply opening it up to the public. But this proved impossible. Built in 1938, the original house was a "cottage style" wood frame structure located in the middle of a residential neighborhood west of central Tokyo. "I loved that house because it was very similar to the house where I was born," says Kuma. By the time the artist died in 1999, the cluttered house had become a fire hazard that ultimately had to be taken down. Instead, Kuma preserved the essence of Masanari's home by deftly salvaging parts of the old building and incorporating them into his new architecture.

Solution

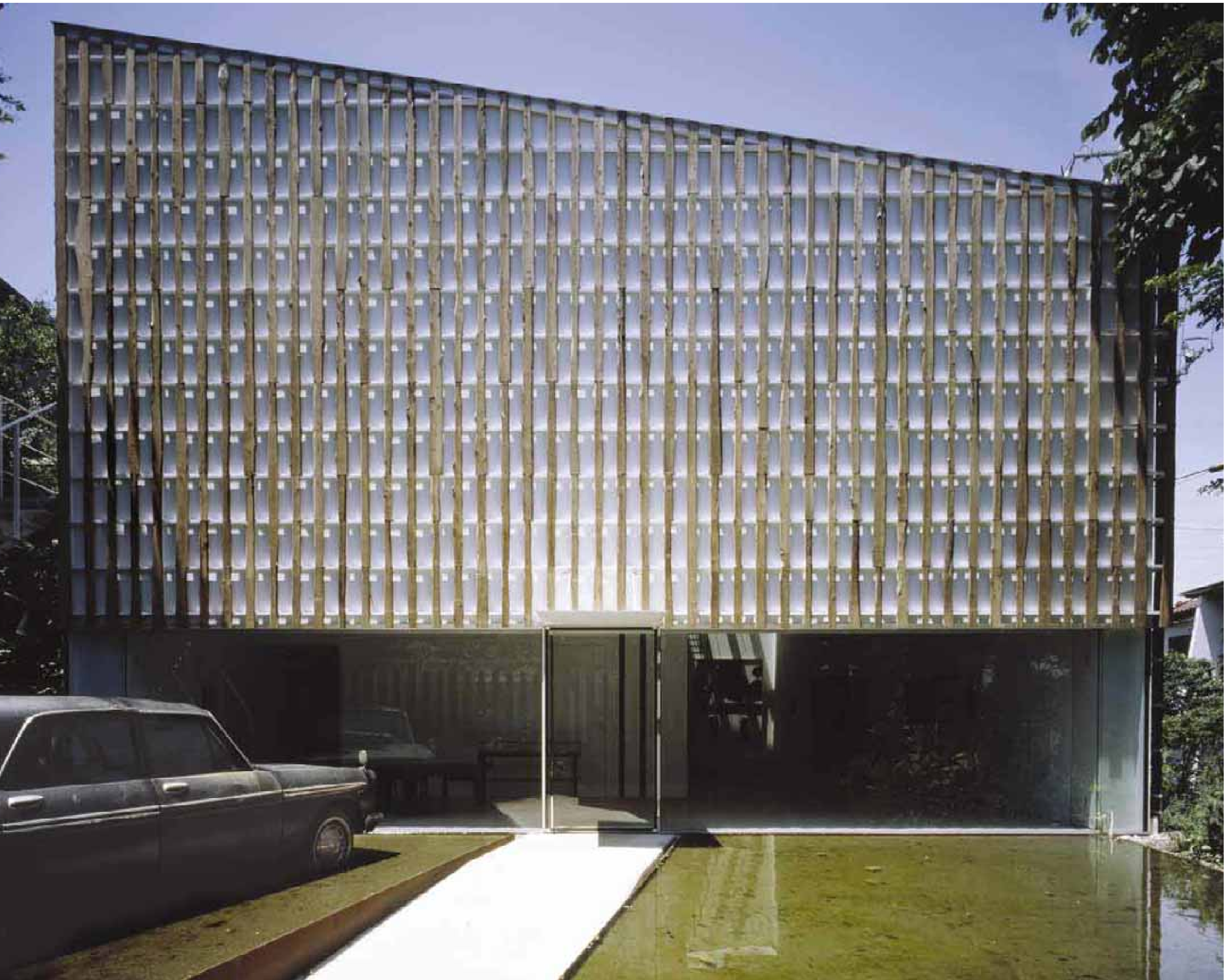
The heart of Kuma's 1,761-square-foot museum is a faithful reconstruction of the artist's atelier: a pastiche of wood siding, door frames, and other lumberyard leftovers artfully added to the main house in the 1950s by a local carpenter. Originally, this atelier jutted out into the garden, but Kuma treated it like an artifact by encas-

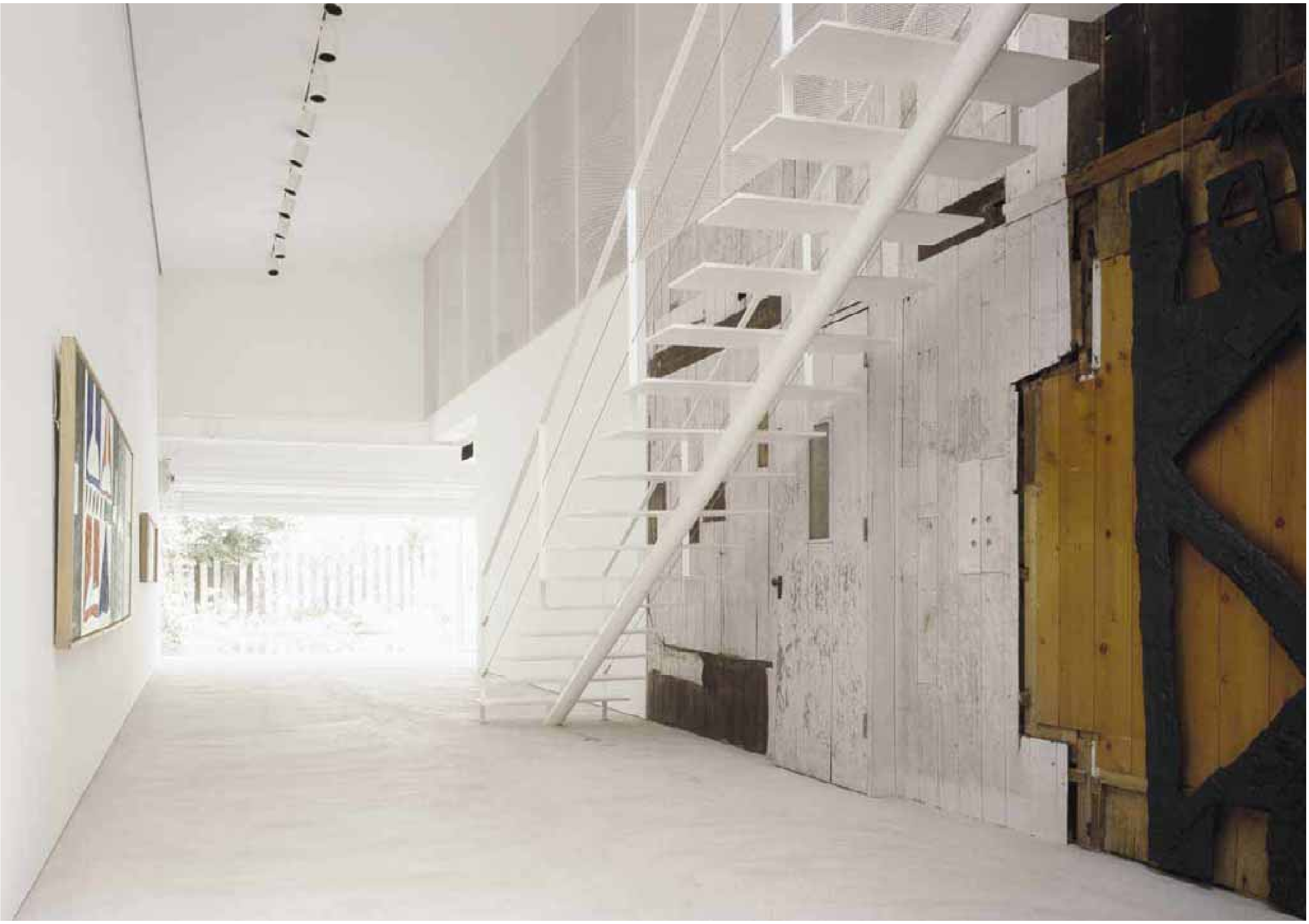
Naomi Pollock, AIA, is RECORD*'s special correspondent in Tokyo.*

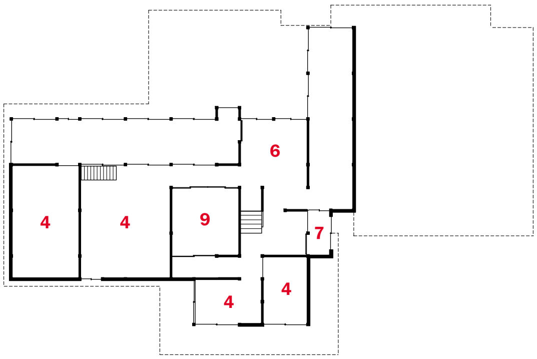


The entrance to the museum (right) with its recycled slats of wood (opposite) is located on the east facade. The former south and east facades (above top left) enclosed storage areas, and the door to the atelier was on the north side (above middle). The car was moved from the northwest corner of the site (above right) to the entrance side.

PHOTOGRAPHY: © DAICI ANO ARCHITECTURAL PHOTOGRAPHY, EXCEPT AS NOTED; RYUJI MIYAMOTO (OPPOSITE, TOP THREE)

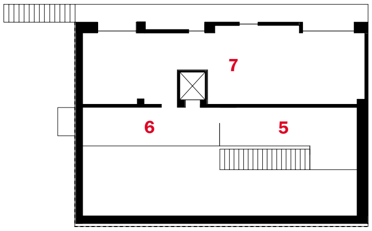




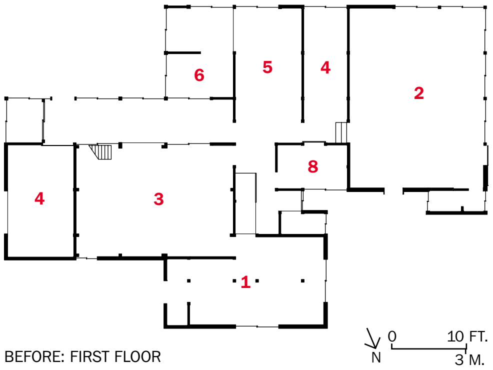


BEFORE: SECOND FLOOR

1. *Former entrance hall*
2. *Atelier*
3. *Atelier/storage*
4. *Storage*
5. *Kitchen*
6. *Bedroom*
7. *Toilet*
8. *Bath*
9. *Japanese room*



AFTER: SECOND FLOOR



6
5
4
2
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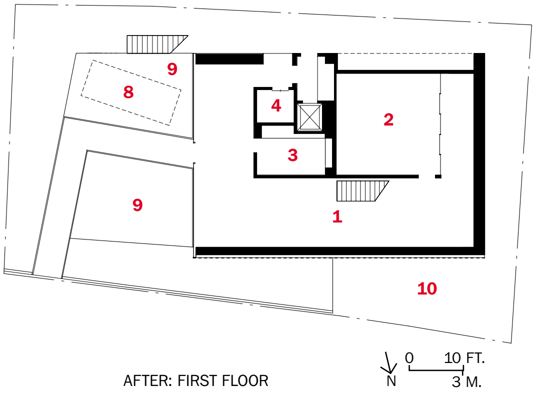
10 FT.
3 M.

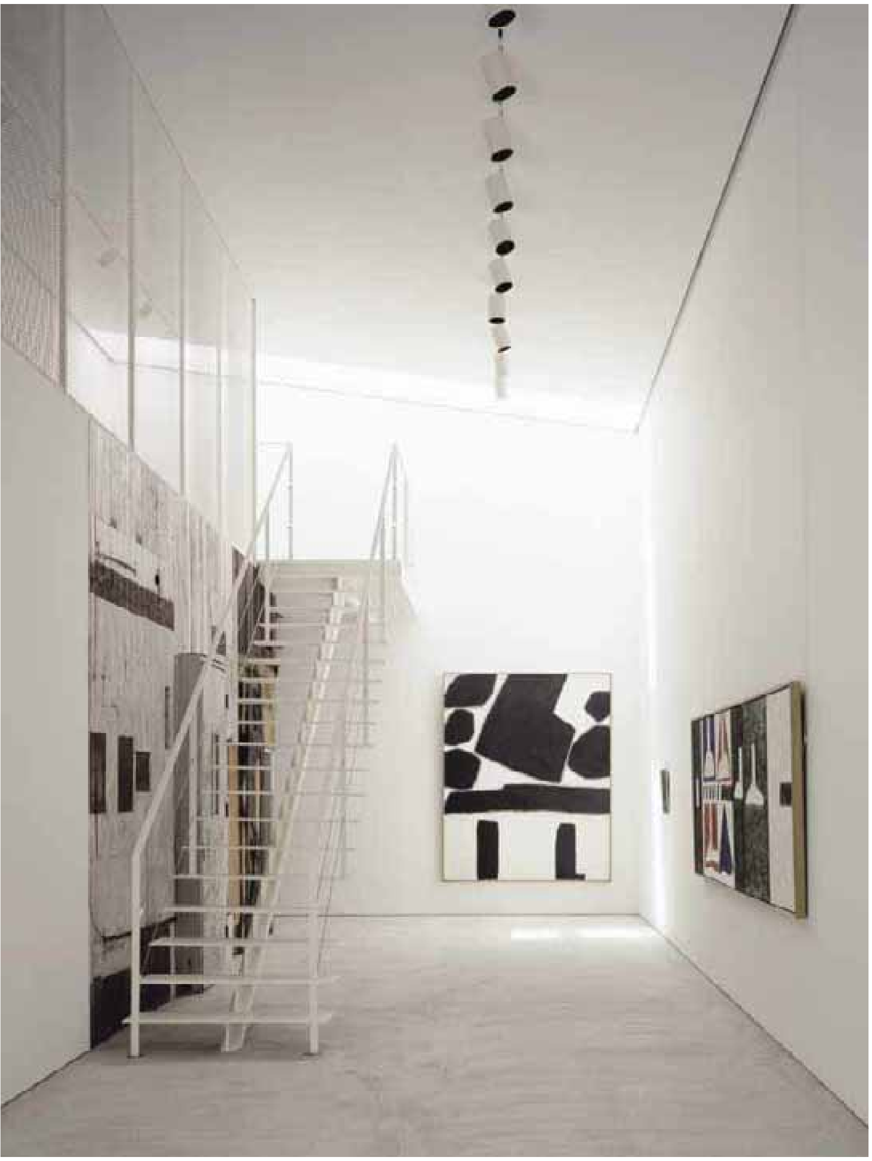
BEFORE: FIRST FLOOR

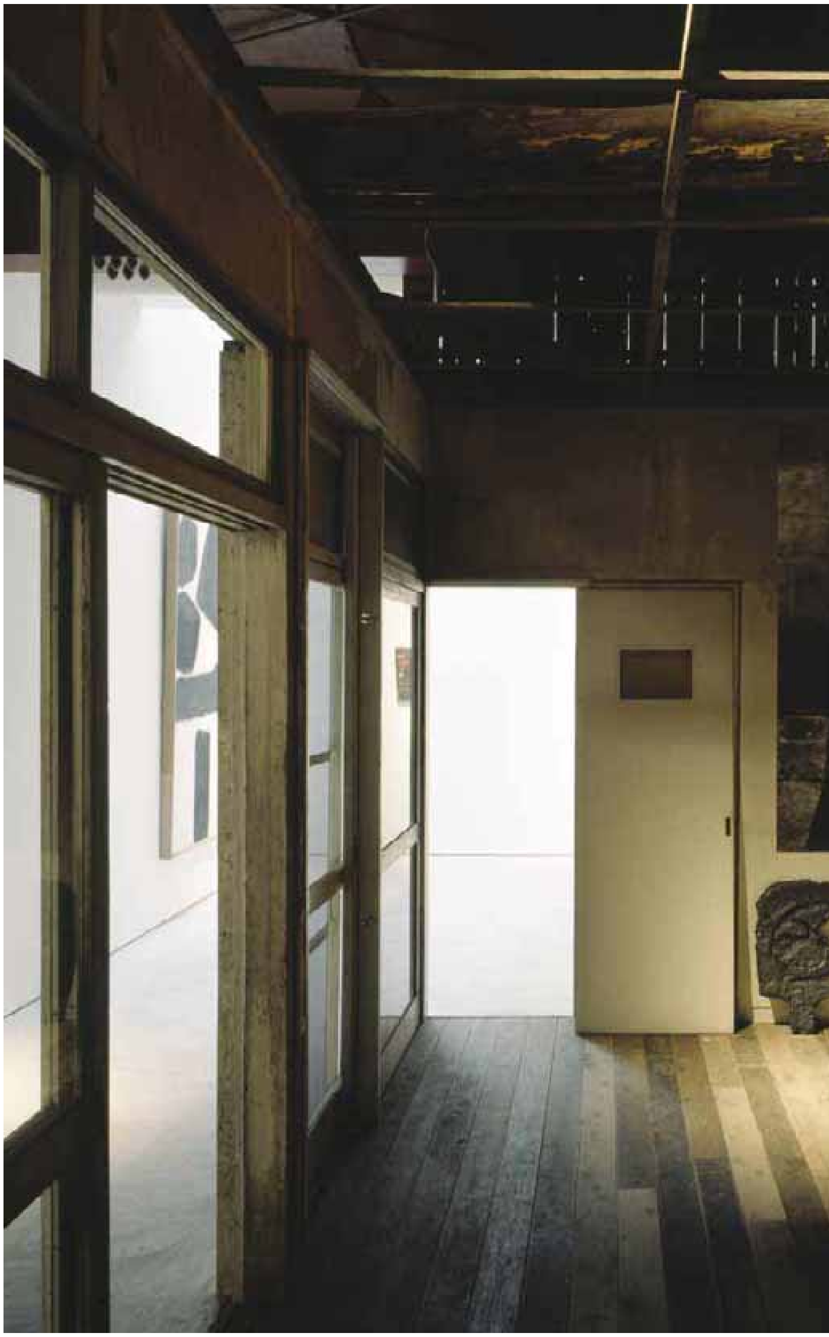


9
8
4
2
3
9
1
10
N
0
10 FT.
3 M.

AFTER: FIRST FLOOR

1. *Main gallery*
2. *Existing atelier*
3. *Office*
4. *Bathroom*
5. *Upper gallery*
6. *Archive*
7. *Apartment*
8. *Existing car*
9. *Artist's installation*
10. *Parking*



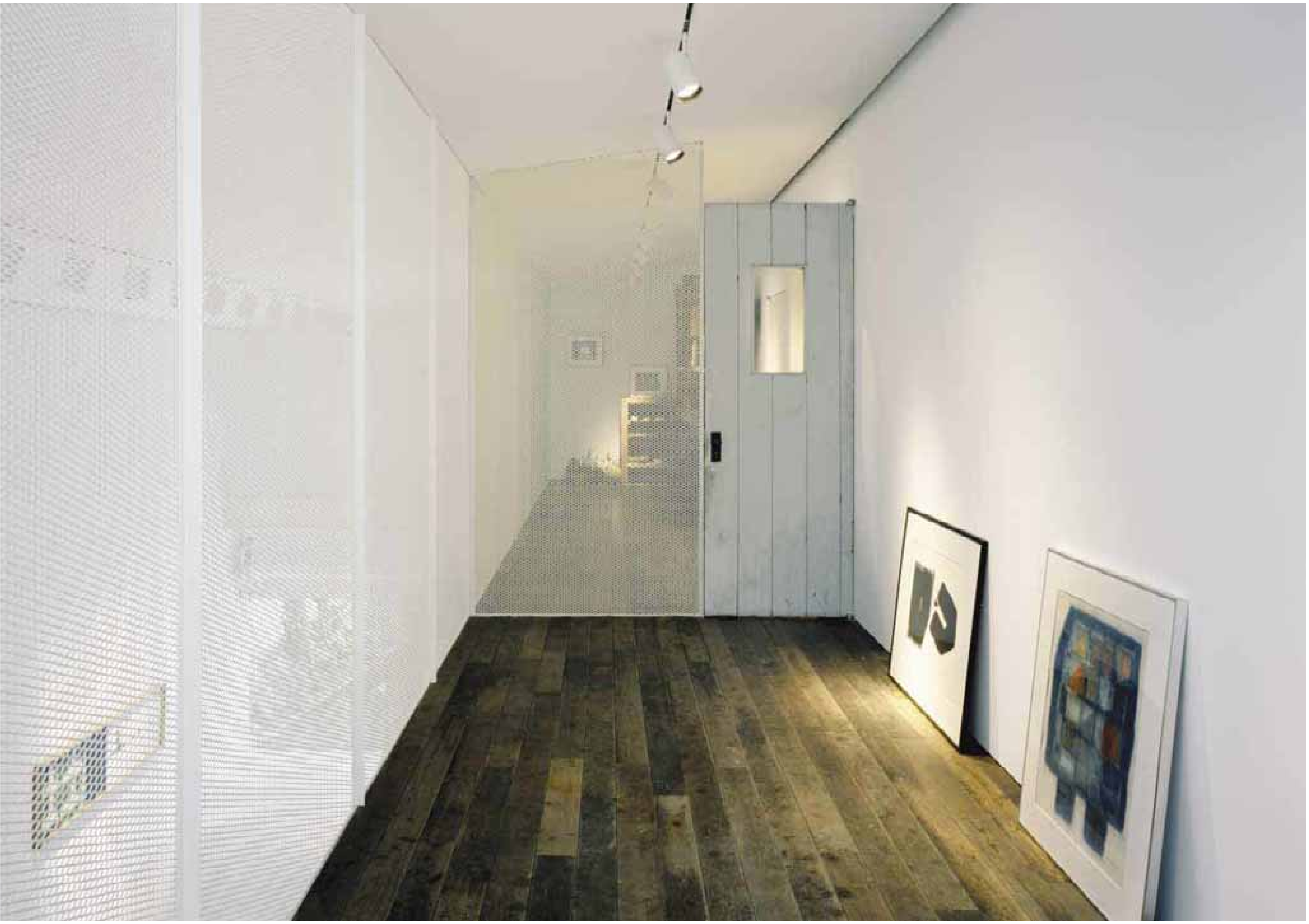


ing it within the new museum's steel-frame exterior enclosure. Between the atelier and the new outer skin is a high-ceilinged trough of space for a gallery where selections from the artist's vast collection of objects are displayed alongside his own artworks—paintings, ceramic vessels, and other pieces made of wood and metal. Thin steel stair treads lead up to the second-floor display area masked by metal-mesh walls and an efficiency apartment for Mrs. Murai. Kuma's palette of pristine, white walls, neutral concrete floors, and crisp detailing complement the robust colors and strong forms of the artworks as well as contrast with the atelier's dark wood surfaces and well-used furniture.

Kuma's intention was not simply to place the artist's home and its contents on a pedestal: He integrated old and new. An elegant display case Kuma created stands on three legs of black steel and a fourth fashioned from a newel post that once stood at the top of the stairs. Made of wood, the post still bears teeth marks left years ago by Masanari's dog. A true marriage of the architect's passion for materials and the artist's love of the memory-laden, the new facade is covered with irregular, hand-cut wood planks harvested from the old house at the time of its deconstruction. "We didn't have quite enough boards, so we put spaces between them," explains Kuma. The rhythmic

The old atelier on the first floor (top right) has been salvaged (right) and placed within a new, white steel-framed container. In the main gallery (opposite and above), paintings by Murai are displayed with collaged elements from the former structure.

PHOTOGRAPHY: © RYUJI MIYAMOTO (TOP RIGHT)



The former bedroom on the second floor (left) looked into the stair hall. This level, with original plank floors, is now partially enclosed by a white metal-mesh screen (above). It is devoted to display, storage, and an apartment for Mrs. Murai.

pattern bears a strong resemblance to the wood louvers that Kuma often uses in his architecture.

Below the slat-covered upper wall, the plate-glass facade's smooth surface is interrupted only by the front entrance. The huge window wall looks out at two, 6-inch-deep pools separated by the walkway leading up from the street. It was Kuma's idea to place Masanari's treasured Toyota, one of the carmaker's earliest models, in one of the ponds. Though the car has not been driven since the early 1970s, Masanari kept it in his garden. "We just enjoyed looking at the car getting older and changing color amid nature," explains Mrs. Murai.

Commentary

In Japan today, very few people share Mrs. Murai's sentiment when it comes to holding onto old architecture. And retrofitting existing structures to comply with the country's stringent earthquake code can be daunting even to the most determined preservationist. "It frequently costs more to renovate than to start over," says Kuma, who notes that "clients here are just beginning to understand the value of renovation." Since the old building had to be virtually demolished to build the new museum, this project goes beyond what you might call an "extreme makeover." Still, Kuma's building succeeds in preserving the spirit of the artist and his unique house. ■

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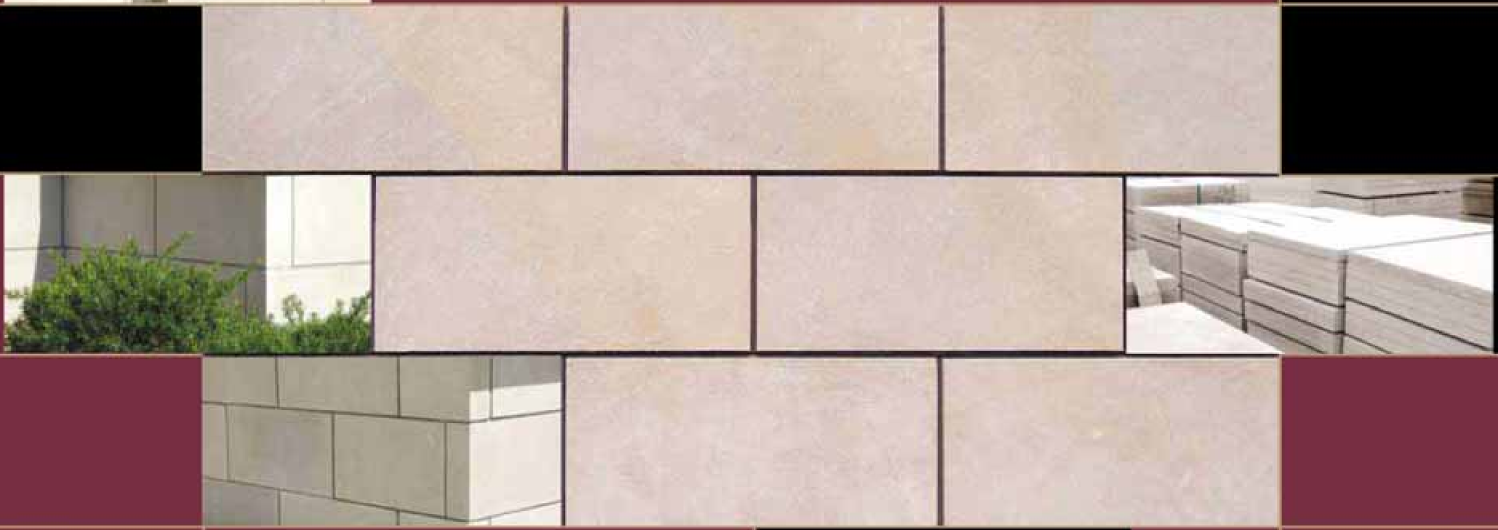

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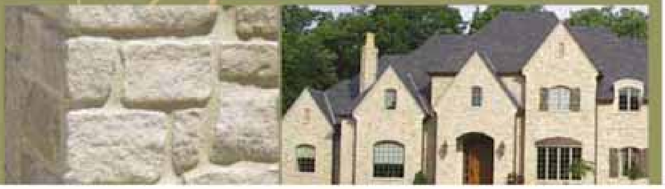

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New Life for the 'Big Easy'

An international competition for new housing in New Orleans

Sponsored by *Architectural Record* and McGraw-Hill Construction in partnership with Tulane University School of Architecture

New Orleans. The Crescent City. Now, wounded by Hurricane Katrina–leaving in its wake widespread damage to homes, lives, and futures–needs your 'hearts and minds' to reassess, re-envision and redesign the region's housing. To breathe new life and rebuild lives.

Architectural Record and McGraw-Hill Construction, in partnership with Tulane University School of Architecture, invite you to submit your ideas to help design the future of New Orleans. Participants in this competition will design housing for an actual block in the city of New Orleans. Winning designs will be published in *Architectural Record* and presented at the 2006 AIA Convention and Expo. Selected submissions will appear on McGraw-Hill Construction web sites.

Programmatic elements include:
- Single family housing
- Multi-family housing
- Mixed-use urban planning

Other programmatic elements:

- This competition encourages close attention to issues of sustainability, both in urban planning and architectural design.
- Contestants are encouraged to incorporate modular or prefabricated building products and processes wherever possible.

Important Note: While the competition welcomes visionary or hypothetical proposals, contestants are encouraged to consider that New Orleans faces a severe and immediate housing crisis, and is in need of practical, affordable solutions to this problem.

Competition Entry:

Go to **www.architecturalrecord.com** for submission requirements and more specific programmatic information. Competition specifics will be included in the competition packet. All entries must be received no later than **March 1, 2006.**

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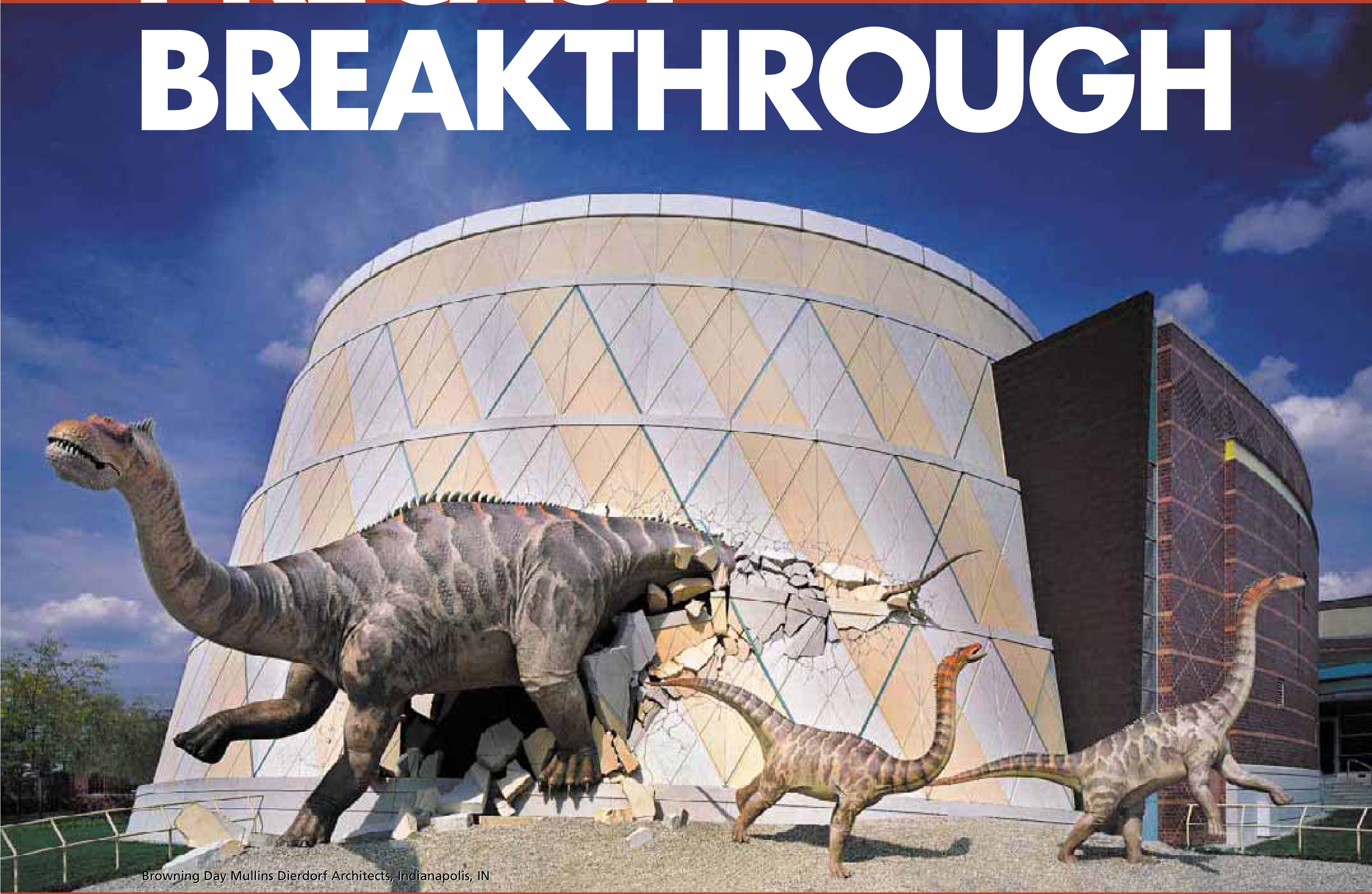

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The Perils of Restoring "Less Is More"

KRUECK & SEXTON ARCHITECTS FACED TREMENDOUS CHALLENGES IN THE RESTORATION OF MIES VAN DER ROHE'S 1956 MASTERPIECE, S.R. CROWN HALL, AT THE ILLINOIS INSTITUTE OF TECHNOLOGY

By Sara Hart

Formal ceremonies celebrating architecture are usually reserved for ground breakings, openings, or reopenings, rarely for closings. But on May 17, 2005, S.R. Crown Hall at the Illinois Institute of Technology (IIT), designed by Ludwig Mies van der Rohe and completed in 1956, was closed for restoration and renovation amid much fanfare. A hundred or so admirers of the school and the architect convened to witness a symbolic demolition—the inverse of a ribbon cutting—to launch the restoration. Mies's grandson, Chicago architect Dirk Lohan, won the opportunity to smash one of the 10-foot-tall windows at an online auction on eBay, sponsored by the Mies van der Rohe Society (mies.iit.edu).

In the audience at the ceremony was Mark Sexton, AIA, principal of Krueck & Sexton Architects, the local firm charged with this phase of an ongoing restoration of Crown Hall and other Mies structures. Sexton admits that after the sledge hammer shattered the glass and the university president announced that the reopening would take place in 15 weeks, reality set in, and his heart began to race. Although an opportunity of a lifetime for any firm, performing reconstructive surgery on what *Time* magazine called "one of the world's most inspiring and astonishing structures" is an undertaking fraught with danger, suggesting that a tight schedule might have been the least of Sexton's worries. Crown Hall is the home of IIT's College of Architecture, where Mies was director from 1938 until 1958. Thirty-six years after his death, the faculty still consists of Mies disciples, who, with a student body of 600, consider themselves conservators of the masterpiece, which received Chicago landmark status in 1997 and became a National Landmark in 2001.

CONTINUING EDUCATION

Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/ AIA Continuing Education article. To receive credit, turn to page 156 and follow the instructions. Other opportunities to receive Continuing Education credits in this issue include several sponsored sections beginning on page 201.

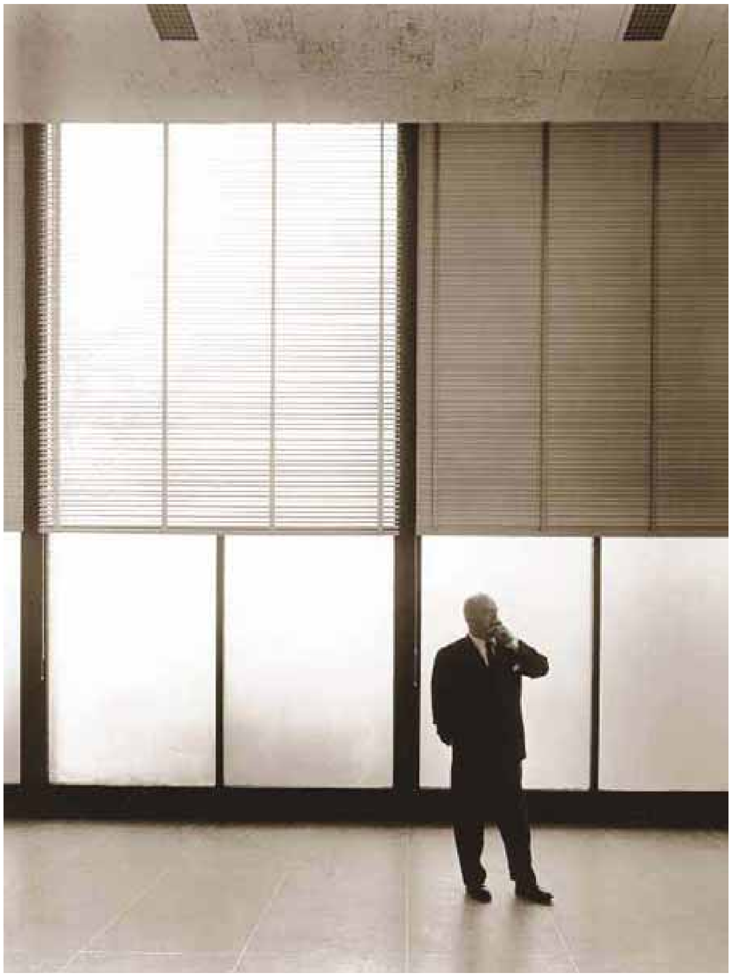
LEARNING OBJECTIVES

After reading this article, you should be able to:

1. *Describe the challenges of restoring a Modernist building.*
2. *Discuss the material substitutions made to Mies's design concept in order to preserve the design aesthetic.*
3. *Explain the problems with the original glass used in the building.*

For this story and more continuing education, as well as links to sources, white papers, and products, go to **www.archrecord.com**.

IMAGES: COURTESY KRUECK & SEXTON, EXCEPT AS NOTED; HEDRICH-BLESSING (THIS PAGE)



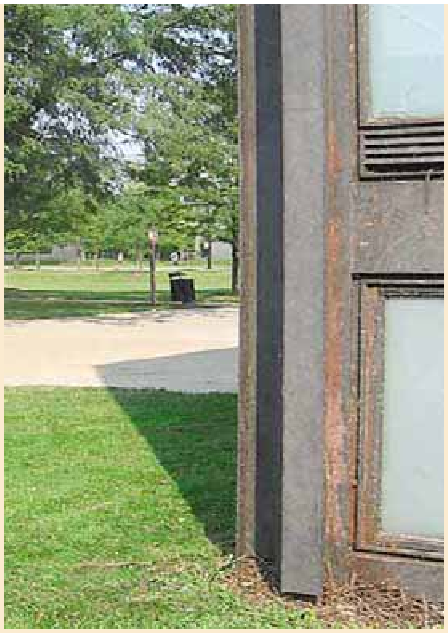
Ludwig Mies van der Rohe circa 1956 standing in S.R. Crown Hall, the architecture school he designed at the Illinois Institute of Technology.

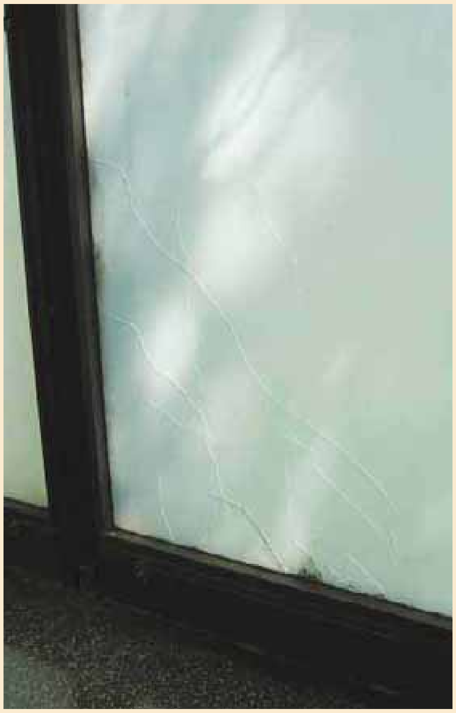
The weight of "almost nothing"

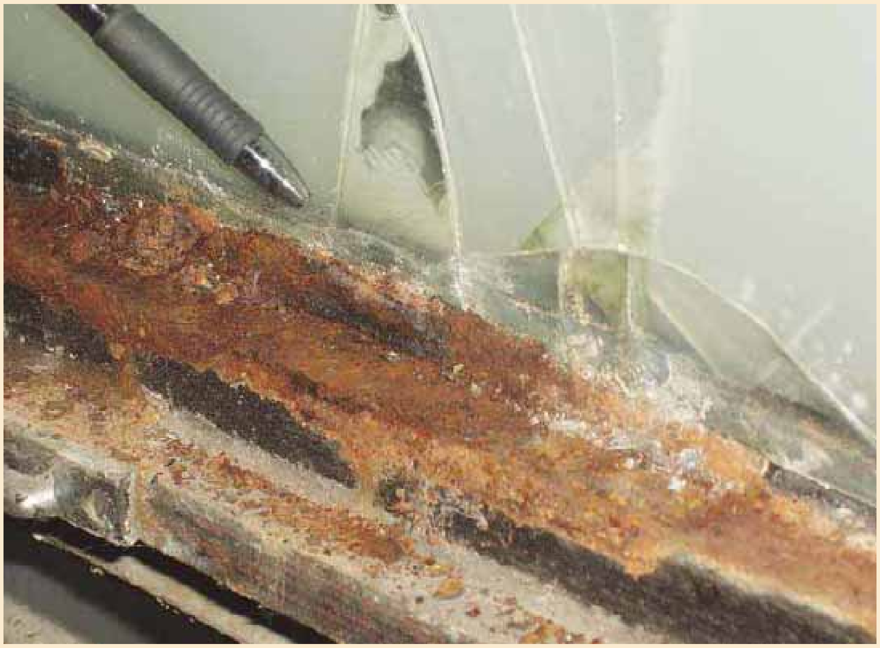
Unlike earlier Crown Hall renovations in which the travertine and steel of the South Porch were replaced and women's bathrooms were added in the basement, this phase was more complex and intricate. Crown Hall contains the architectural DNA of Mies's entire aesthetic. The beauty exists paradoxically in the metaphorical nothingness of it. The building is a big box, a "one-room school house," as Dean Donna Robertson, AIA, has called it. The 120-foot-by-220-foot floor plate seems to hover 6 feet above grade. Meanwhile, the roof hangs 18 feet above the floor from an exoskeleton made of four, 6-foot-deep steel girders. From the inside, the resulting clear-span, "universal space" experience is that of being in a structure with no visible means of support. Furthermore, the curtain wall had enormous expanses of glass held in place by the slimmest of stops.

Ronald Krueck, FAIA, and Sexton, both alumni of IIT, were

Steel corrosion was extensive. The repair cycle included sandblasting, inspection, more sandblasting, and repair. Steel conducted moisture along the base causing condensation in the winter. When the paint is damaged by moisture and exposes the steel to the elements, the steel rusts and forms a red dust (right and below). Corrosion pits form, which produce just enough pressure in the stop to crack the glass (below and far right).







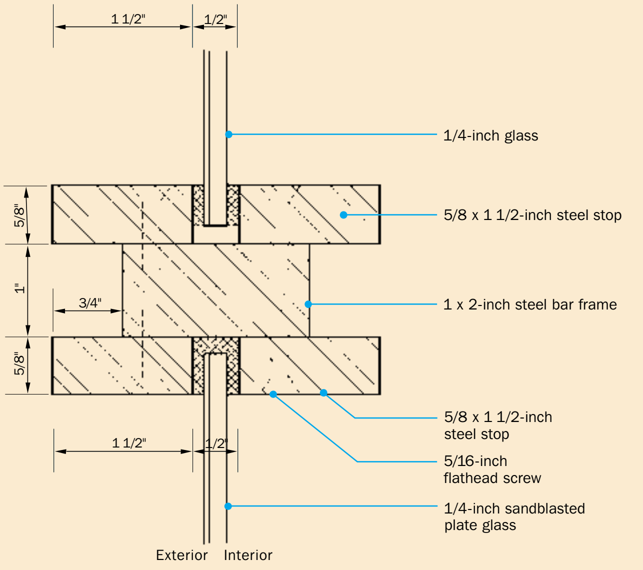
well aware that the starkness of Mies's work does not equate to simplicity, nor was his bias in favor of off-the-shelf components suggest a generic architectural vocabulary. They were ready to preserve and protect every detail, adjacency, span, and material. Still, it takes a lot of research and study to restore "almost nothing." The architects were fortunate to have the services of preservation consultant Gunny Harboe, AIA, of Austin AECOM (formerly McClier).

The scope of work was extensive: The sandblast removal of all lead-based paint from interior and exterior steel and repairs to the members that had rusted. The steel hadn't been repainted in 25 years, so the dense "Miesian black" from photographs had faded to a dull gray. The glass panels did not conform to any code, so they had to be replaced, and the steel stops redesigned. The process also involved refurbishment and reactivation of the blinds, disassembling and retrofitting them with electromagnetic release hardware, and refurbishing the original Ellison stainless-steel doors on the north and south facades. Finally, the $3.6 million renovation included upgrading the bathrooms to meet current ADA accessibility standards.

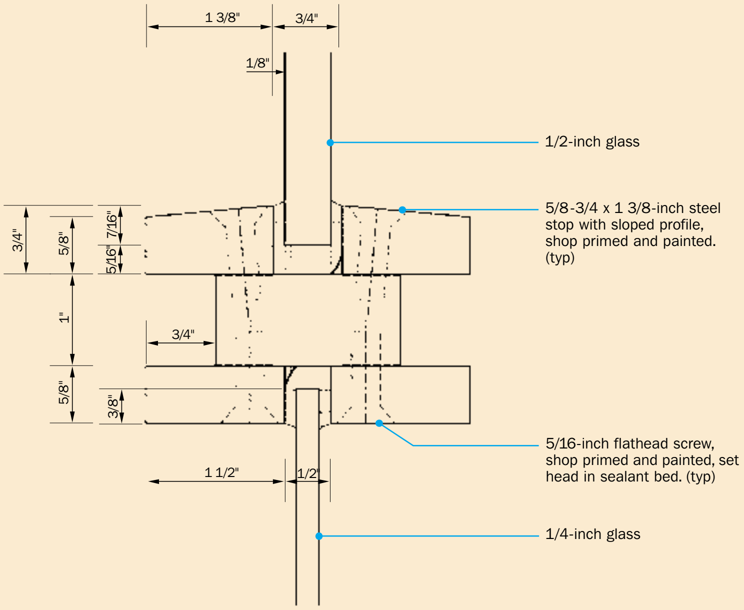
Obviously, the restoration didn't actually take place in 15 weeks, as the closing ceremony pronouncements suggested. Assessment of the existing conditions, study of Mies's details, and the final design solution evolved over a two-year period. The actual demolition and construction lasted 15 weeks, but when the symbolic shattering took place, every beam, frame, and pane of glass was already fabricated and waiting for assembly nearby. The planning process was methodical, and the execution surgically precise. Much of the credit for this goes to Clune Construction Company, whose scheduling and coordination of the demolition, repair, and reconstruction sequences included a contingency plan for dealing with and solving unforeseen problems while staying on schedule.

DEMOLITION AND CONSTRUCTION LASTED 15 WEEKS, BUT EVERY BEAM, FRAME, AND PANE OF GLASS WAS ALREADY FABRICATED.

New frames and tops are in place, awaiting installation of the glass (above). The difference between the original detail (top right) and the new one (right) is very subtle.


1 1/2"
1/2"
1/4-inch glass
5/8"
5/8 x 1 1/2-inch steel stop
1"
3/4"
1 x 2-inch steel bar frame
5/8"
5/8 x 1 1/2-inch steel stop
1 1/2"
1/2"
5/16-inch flathead screw
1/4-inch sandblasted plate glass
Exterior
Interior

WINDOW DETAIL: ORIGINAL DESIGN


1 3/8"
3/4"
1/8"
1/2-inch glass
3/4"
5/8"
5/16"
7/16"
5/8-3/4 x 1 3/8-inch steel stop with sloped profile, shop primed and painted. (typ)
1"
3/4"
5/8"
3/8"
5/16-inch flathead screw, shop primed and painted, set head in sealant bed. (typ)
1 1/2"
1/2"
1/4-inch glass

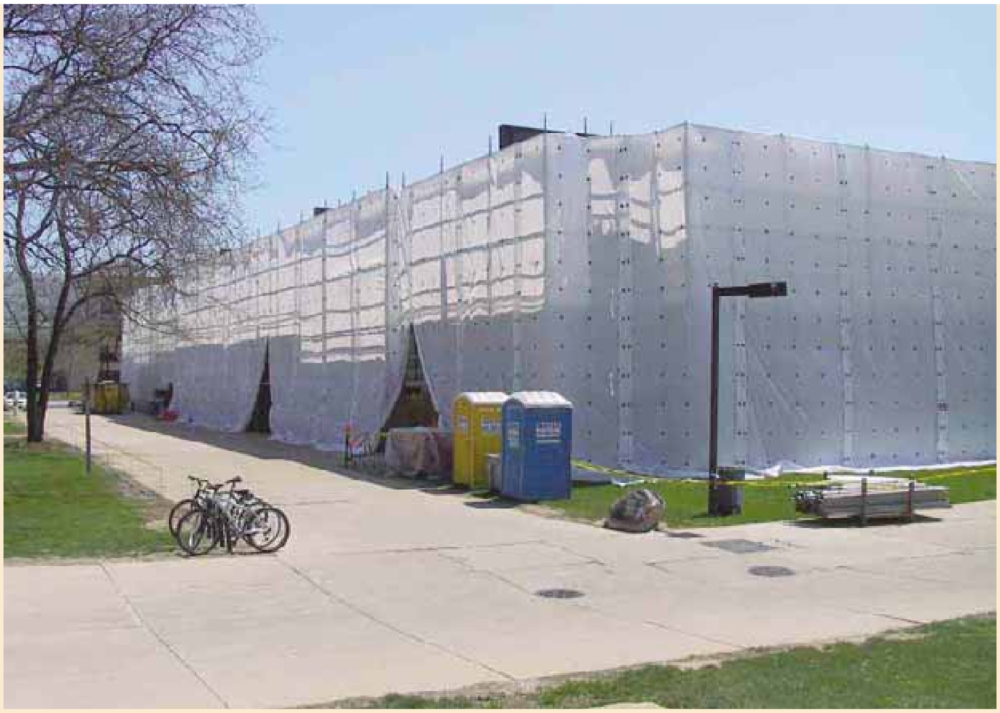
WINDOW DETAIL: RESTORATION DESIGN

The first task was to quickly shroud the entire building in order to contain dust from the lead-based paint that was to be sandblasted off all the steel members. “We divided the building into quadrants,” explained Michael A. Tenuta, senior vice president of Clune Construction. “Sandblasting the steel was followed by an inspection, then more sandblasting, then repairs, then another inspection, then the first of three coats of paint. There was no float time, and there was a constantly roving punch list.”

The sound of glass shattering

“Mies’s design was experimental,” explains Sexton. “At the time, glass technology was in its infancy, and there were few regulations. Mies relied on his intuition regarding size.” The facade consists of two types of windows. The original upper panels were enormous and not tempered—9 feet 8 inches by 12 feet 9 inches—and only ¼ inch thick. With no codes to dictate size and thickness at the time, Mies was free to push the known limits of engineering. His experiment had mixed results. Great expanses of crystal-clear glass poured daylight into the studio and created the “barely there” effect he sought. However, “great expanses of glass have a tendency to break and fall out in strong winds,” Sexton adds. (Anecdotal evidence suggests that no one was ever injured, or at least not seriously.)

In contrast to the perfectly transparent upper panels, the lower units were sandblasted, which provided some privacy for the students, but mostly it served to hide interior activity from view, and thus retained a pristine Modernist face to the public. However, the glass was sandblasted on the interior face. Sandblasted glass is porous and absorbs oil from fingerprints and the adhesives students used to mount drawings on the windows. Due to decades of unintentional damage, the lower units became stained and scratched. In addition, the building was subjected to ad hoc alterations and mandatory repairs between 1970 and 1977. In 1975, Skidmore, Owings & Merrill (SOM) replaced all the glass, including the thin upper panels, which were replaced with ⅜-inch lites. Then, employing new technology for the lower panels, SOM



The contractor shrouded the entire building (above) to keep the dust from the lead-based paint from escaping into the environment. Students work at Mies-designed drafting tables in 1956 (left). Mies's grandson, architect Dirk Lohan, ceremoniously launches the restoration by smashing one of the glass panels.

installed a laminated glass with a mylar interlayer to imitate the translucent qualities of the original sandblasted glass. Although the solution eliminated the staining problem, the result was more reflective than Mies's matte finish, and repairing the repair, as it were, presented a perplexing challenge for Krueck & Sexton.

ALTHOUGH THE SOLUTION ELIMINATED THE STAINING PROBLEM, THE RESULT WAS MORE REFLECTIVE THAN MIES'S GLASS FINISH.

Every solution seemed to create more problems. The first challenge, and the one that generated the most controversy, centered on the upper panels. First of all, the glazed area was too large by code (or common sense) to have the original ¼-inch-thick polished plate glass replaced. To comply with the code, the architects could have simply specified ⅜-inch tempered glass. Keeping in mind that Mies's details are deceptively simple, Sexton recognized that tempered glass could be less than perfect. "When glass passes through an oven during the tempering phase, it can develop the slightest surface wave from contact with the rollers," he explains. The waviness can sometimes be noticeable when viewing reflected images from a distance. This would be unacceptable to even the most forgiving critic.

Now, ½-inch glass doesn't have to be tempered, so Sexton was confident that he could deliver a perfect surface. But, of course, every solution yields a new problem. In this case, the problem was color. Iron in glass gives it a green tint, so the thicker the panes, the greener the tint. Crown Hall was intended to have glass so clear as to seem barely there, which was possible with ¼-inch panes. The architects eventually found a manufacturer that could make low-iron glass in such large sheets, in order to achieve maximum transparency, high-fidelity light transmission, and the kind of brilliance usually reserved for jewelry cases and museum displays.

The 68 original lites of the upper panels were replaced with PPG Starphire (low iron) glass, and the cycle of problems and solutions con-

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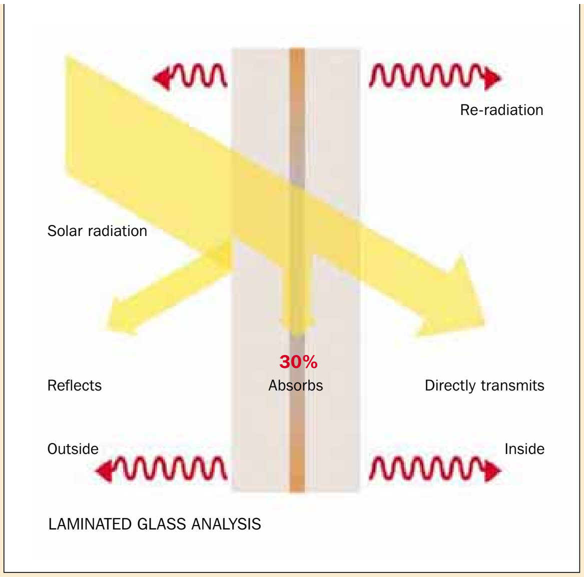
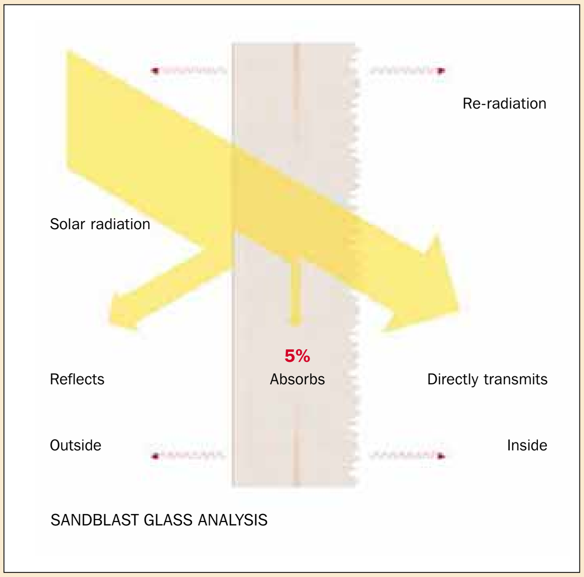


LAMINATED GLASS ANALYSIS



SANDBLAST GLASS ANALYSIS

At least five full-size mock-ups (above) were produced to test several glazing options and the blind replacements. Studies of solar radiation transmission show the difference between laminated glass units (top left) and single sandblasted panes (left).

tinued. Thicker glass is heavier, of course. The new panels weighed 700 pounds, making them way too heavy for the original stops. In other words, the stops had to be enlarged from ⅝ inch to ¾ inch in depth. As the wall sections show, this redesign is subtle enough to be called invisible. However, it has a slope. The architects felt, and the mock-ups confirmed, that a deeper reveal would look heavy. Sexton argued that by sloping the stop from ¾ inch at the glass to ⅝ inch at face, it would read the same as the original. The purists rebutted that it would be blasphemous to introduce any amount of slope in a rigidly rectilinear structure. They also argued that Mies used off-the-shelf extrusions, and a sloped stop would have to be custom fabricated, a clear violation of his principles. Sexton, with the support of Dean Robertson and Gunny Harboe, prevailed, because they convinced all the interested parties that, first of all, the slope cannot be seen. And secondly, compromising on the custom-design issue was better than specifying a heavy, and thus inappropriate, stock stop.

> **THE PURISTS REBUTTED THAT IT WOULD BE BLASPHEMOUS TO INTRODUCE ANY SLOPE IN A RIGIDLY RECTILINEAR STRUCTURE.**

Clune enlisted specialty-glazing contractor Harmon to handle the field work and endure the closest scrutiny. According to Harmon, the facade consists of more than 800 steel stops held in place by more than 6,250 screws, and each screw was countersunk to protect the ever-so-slightly beveled profile. Tenuta marvels at the scrutiny. They had to be submitted for approval, were rejected, remade, and resubmitted. Even the depth of the countersink was debated, until a tolerance of a mere 1⁄64 inch was agreed upon.

The 120 lower lites were replaced with a clear tempered glass from Viracon, and the inner face was sandblasted to recreate the exact same effect as the original. The Miesian scholars were in agreement with this solution. However, Sexton knew that unless the sandblasted side was treated, the school would face the same staining and scratching problems it did before. Fortunately, technology eliminated many con-

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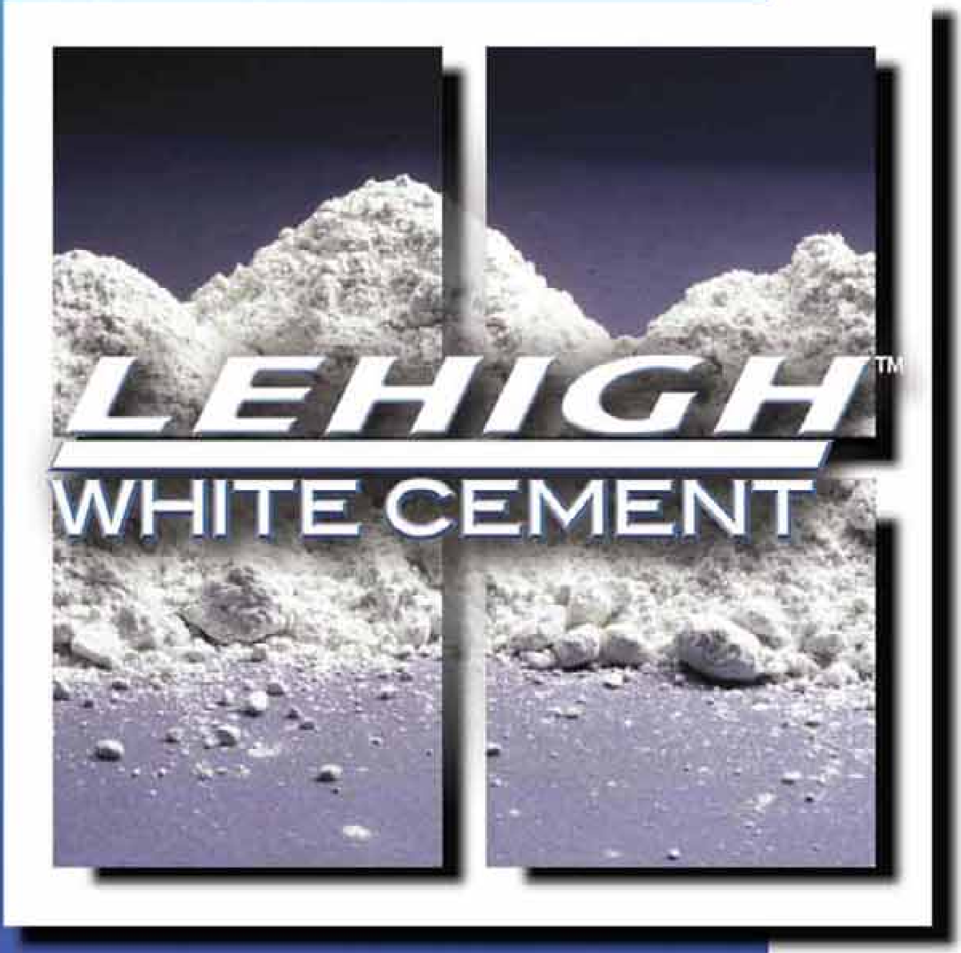

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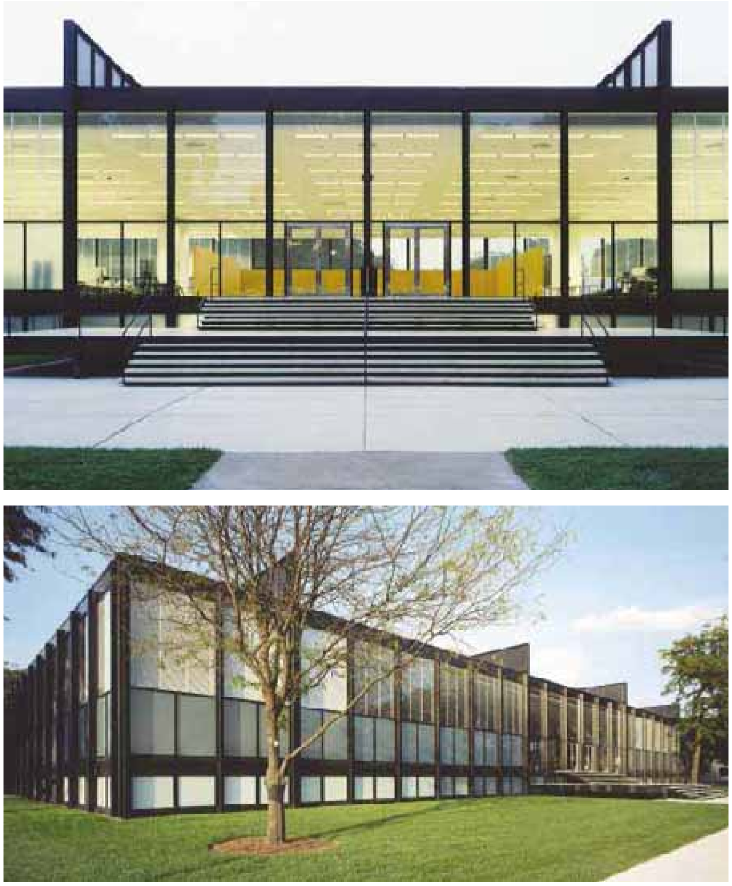
cerns. Computer-controlled manufacturing allows glass to be both tempered and sandblasted, and as proved here, to be protected by the application of three layers of ultra-clear epoxy, which has no reflectivity, will not change character, and will never yellow.

Finally, there was the issue of the paint. The sharp "Mies black" had faded to a dull gray. The original paint could not be used again, because it was lead-based. Product research led the architects to Tnemec, an industrial paint and coatings manufacturer known for products of extreme durability. The three coats that were applied should last about 25 years.

Studying Krueck & Sexton's restoration and renovation of Crown Hall reveals more about Mies's design methodology than a slide-show lecture in architecture school ever could. Its work also makes a convincing argument for balancing preservation of original intent with current needs. The great Modernist buildings of the 20th century were meant to have long, working lives. Modifications to Crown Hall will be necessary again in another 50 years. As evidenced by SOM's restoration of Lever House in New York in 2002 and Polshek and Partners' careful restoration of Louis Kahn's Yale Art Gallery in New Haven, currently under way, intimate intervention of Modernist icons might be the only authentic way to know them. ■



S.R. Crown Hall is returned to its original glory. Krueck & Sexton Architects and Clune Construction searched until they found a manufacturer to recreate the "Miesian black" that delineates the structure's exoskeleton in stark contrast to the rest of the campus.

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

INSTRUCTIONS

- **Read the article "The Perils of Restoring 'Less Is More' " using the learning objectives provided.**
- **Complete the questions below, then fill in your answers (page 226).**
- **Fill out and submit the AIA/CES education reporting form (page 226) or download the form at www.archrecord.com to receive one AIA learning unit.**

QUESTIONS

1. The restoration phase of S.R. Crown Hall that was completed during the summer of 2005 included all except which?
  - **a.** adding bathrooms
  - **b.** removal of lead-based paint
  - **c.** replacing glass panels
  - **d.** retrofitting blinds

2. Crown Hall was designed by whom?
  - **a.** Dirk Lohan, the grandson of Mies van der Rohe
  - **b.** Krueck & Sexton, alumni of IIT
  - **c.** Donna Robertson, dean of the architecture school at IIT
  - **d.** Ludwig Mies van der Rohe

3. Both the demolition and construction were able to be completed in only 15 weeks because of which?
  - **a.** new materials were prefabricated
  - **b.** the scheduling included a contingency plan
  - **c.** there was a constantly roving punch list
  - **d.** all of the factors listed above

4. Which was the major drawback of the upper glass panels?
  - **a.** they were crystal clear
  - **b.** they appeared to be barely there
  - **c.** they were thin and large
  - **d.** they poured daylight into the studio

5. Which was the major drawback of the lower glass panels?
  - **a.** they were a matte finish
  - **b.** they absorbed oil and adhesive
  - **c.** they provided privacy for the students
  - **d.** they kept the public from being able to see in

6. Why were the clear upper glass panels not replaced with the ⅜-inch tempered glass panels?
  - **a.** that would not meet code requirements
  - **b.** they would have a green tint
  - **c.** they would have a waviness
  - **d.** they would be too heavy for the stops

7. The lower glass panels were replaced with which?
  - **a.** mylar-coated glass panels
  - **b.** sandblasted panels like the originals
  - **c.** tempered glass panels
  - **d.** tempered, sandblasted, and clear epoxy protected glass panels

8. The paint was immediately sandblasted off the steel members for what reason?
  - **a.** to give it a textured look
  - **b.** to make it look blacker
  - **c.** to remove lead-based paint
  - **d.** to make a smooth finish for new coats of paint

9. The argument against using sloped stops was which?
  - **a.** the stops needed to match the original ones exactly
  - **b.** a thicker stop, even if it were just a fraction of an inch, would make the frames look heavier
  - **c.** no amount of slope should be introduced into a design that is consciously rectilinear
  - **d.** sloped stops could not be fabricated

10. Mies van der Rohe's design concept for Crown Hall included all of the following except for which?
  - **a.** an open universal space
  - **b.** upper walls that were barely there
  - **c.** a reflective surface on the inside of the glass
  - **d.** a pristine Modernist view to the public

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Residential

Creating rooms with a view is the defining principle of these four uniquely sited residences

The houses shown here share the distinction of being on hillsides that offer spectacular views. The Art Studio and Residence sits on the edge of an open and grassy hilltop, overlooking the landscape of northern Connecticut, which displays a patchwork of New England farms. Sited on the side of a promontory of Orcas Island in the San Juan Islands off the coast of Washington State, the Long Residence features a distant vista of the Harney Channel, where green and white ferries ply their route day after day. A tiny sleeping cabin overlooks Lake Simcoe in the countryside above Toronto, where the owners observe geese stopping by in fall on their migration south, and coyotes walking gingerly on the ice in winter. In Pacific Palisades, Hillside House boasts panaramic views of Rustic and Sullivan Canyons in one direction, and Santa Monica Bay on the other. Even with such disparate locations and varied terrain, the importance of view as the organizing principle of design binds these houses together. *Jane F. Kolleeny*

BRIEFS

Going Dutch The Netherlands first amphibious houses, along the Maas dyke, could provide a new prototype for rebuilding projects in New Orleans. The 37 homes have the ability to float with rising water levels up to 16.4 feet above their normal position by sliding along steel posts, which prevent them from drifting. A quarter of the country's land lies below sea level, and expectations of increasing yearly rain have elicited many prototypes and even models and plans for an entire floating town. American journalists and engineers have been frequent visitors to this project in the past few months as the debate continues over hurricane housing solutions.

Recognizing residential redevelopment The winners of the EPA's 2005 National Awards for Smart Growth Achievement were recognized recently at the National Building Museum in Washington, D.C. For overall excellence, the Denver Urban Renewal Authority took the top prize for redeveloping a 27-acre abandoned amusement park into a mixed-use neighborhood. The other awards went to a military-base redevelopment project in Orlando, a shopping-mall redevelopment project in Lakewood, Colorado; a central district plan in Pasadena, California; and the town of Redding, Connecticut, for cleanup and redevelopment of an abandoned wire mill into a mixed-use, transit-oriented neighborhood. (See www.epa. gov/smartgrowth/awards.htm).

Pods may make poor pads The reality of living in a 13.1-by-8.2-foot capsule may be too confining to bear for residents of Tokyo's Nagakin Capsule Tower. The building, completed in 1972, faces either a refurbishment or replacement—with residents making a case for the latter. Architect Kisho Kurokawa designed the pods, which feature built-in beds, bathrooms, and one circular window. Kurokawa gives the building about a 50 percent chance of survival, despite its ability to draw tourists.

Dog Box Though it's more typical to ask, "How much is that doggy in the window?" as opposed to inquiring about the doghouse, a $525 "Dog Box" is outshining its residents. Interns at Frank Harmon Architecture in Raleigh, North Carolina, used recycled materials and green-building techniques to create the house, which sold at North Carolina's Triangle Beagle Auction. The roof collects rainwater and provides an attractive surface for planting. For interior creature comfort, a photovoltaic solar panel provides electricity to an exhaust fan inside, while a window admits daylight. *Sarah Cox*

CONTENTS

160 **Long Residence**
Cutler Anderson Architects
164 **Hill House**
Johnston Marklee & Associates
170 **Art Studio and Residence**
The Office of Peter Rose
176 **Sunset Cabin**
Taylor_Smyth architects
183 **Residential Products**

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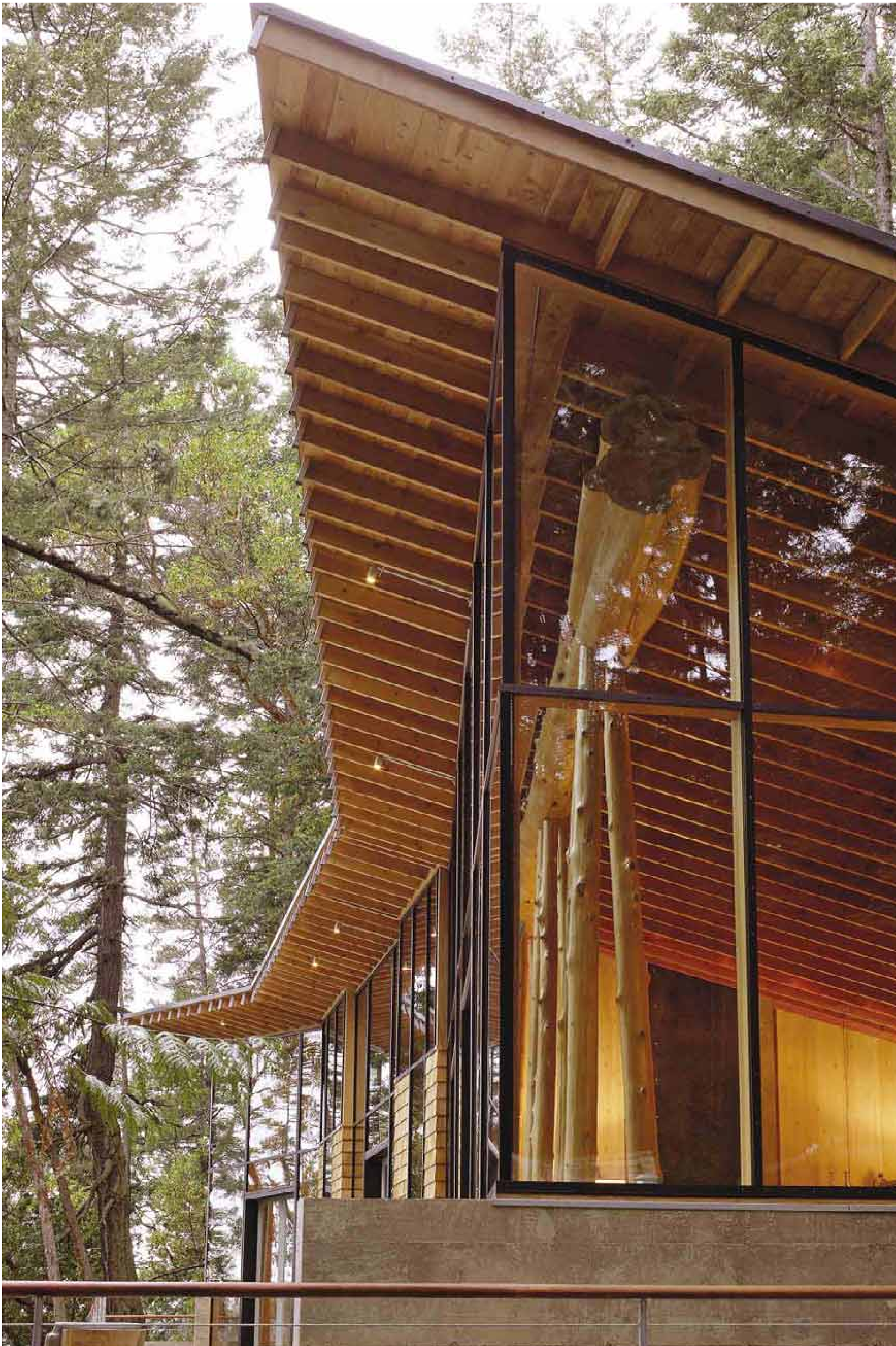
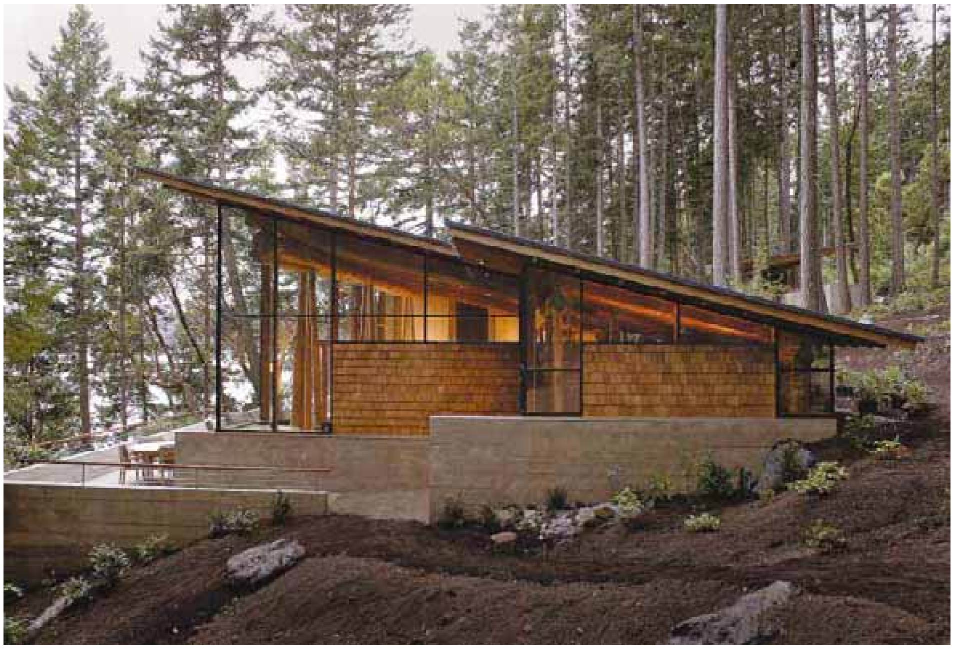


A modern version of the log cabin, the house perches on the side of a hill overlooking the Harney Channel in the San Juan Islands of Washington State. Tripod log assemblies and beams, prebuilt off-site, provide both structural support and aesthetic interest. A glazed front wall opens all the spaces of the house to the view.

The elegant **Long Residence** embodies Cutler Anderson Architects' interpretation of a log cabin



By Victoria Medgyesi

If architect James Cutler, FAIA, had his way, Orcas Island would be nothing but blue and green—at least as seen from the air. Cruising by helicopter over one of the most serene spots in the Pacific Northwest's San Juan Island chain, he managed to get his message across despite the ear-splitting noise. "Look," he shouted, as we passed over a recently completed project. "Isn't that great? You can barely see the place at all."

Honoring geographic conditions, responding to the integrity of natural materials, and staying true to a romantic vision have long formed the philosophic backbone of Cutler Anderson Architects. The firm's ability to translate that philosophy into sophisticated expressions of individuality was what brought one couple to Cutler's door.

Their site was steep but buildable, lush with second-growth forest, and in possession of a sweeping view that overlooked a wide saltwater channel and nearby Shaw Island. Just as fortuitous, says Cutler, was the couple's playful, experimental streak, which he shares. It was this set of particulars and the relatively simple programmatic desires of the client—a serious kitchen, truly private spaces, room for family gatherings—that shaped the design of the vacation retreat.

Writer Victoria Medgyesi lives in Seattle.

Project: *Long Residence, Orcas Island, Washington*
Architect: *Cutler Anderson Architects—Jim Cutler FAIA, Julie Montgomery, AIA, Chad Harding*
Engineer: *Coffman Engineers*

Consultants: *Doug Rasar Interiors (interior designer); Robert Trachtenberg (landscape architect); Eastsound (landscape installation)*
General contractor: *Alford Homes*

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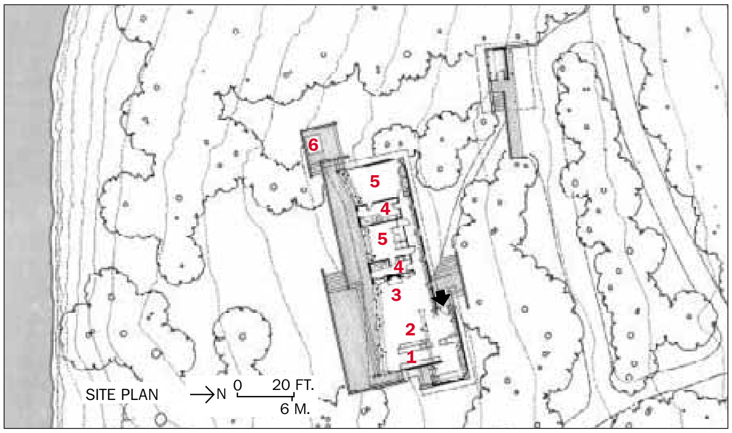
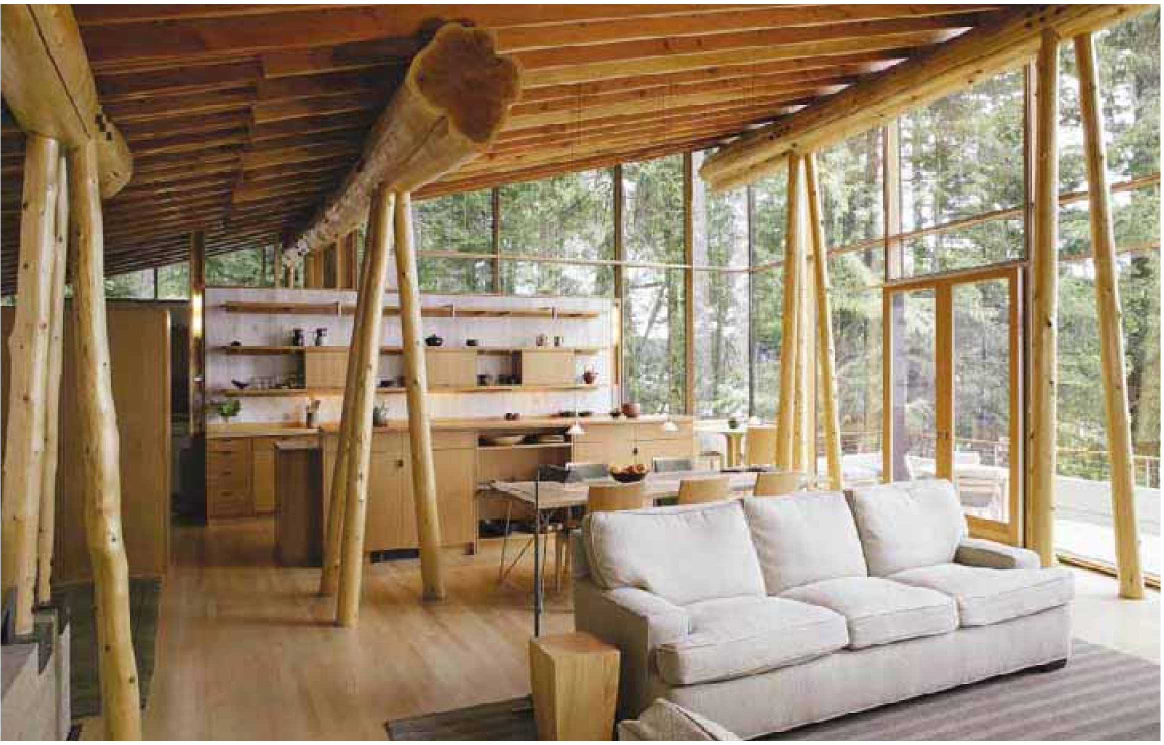
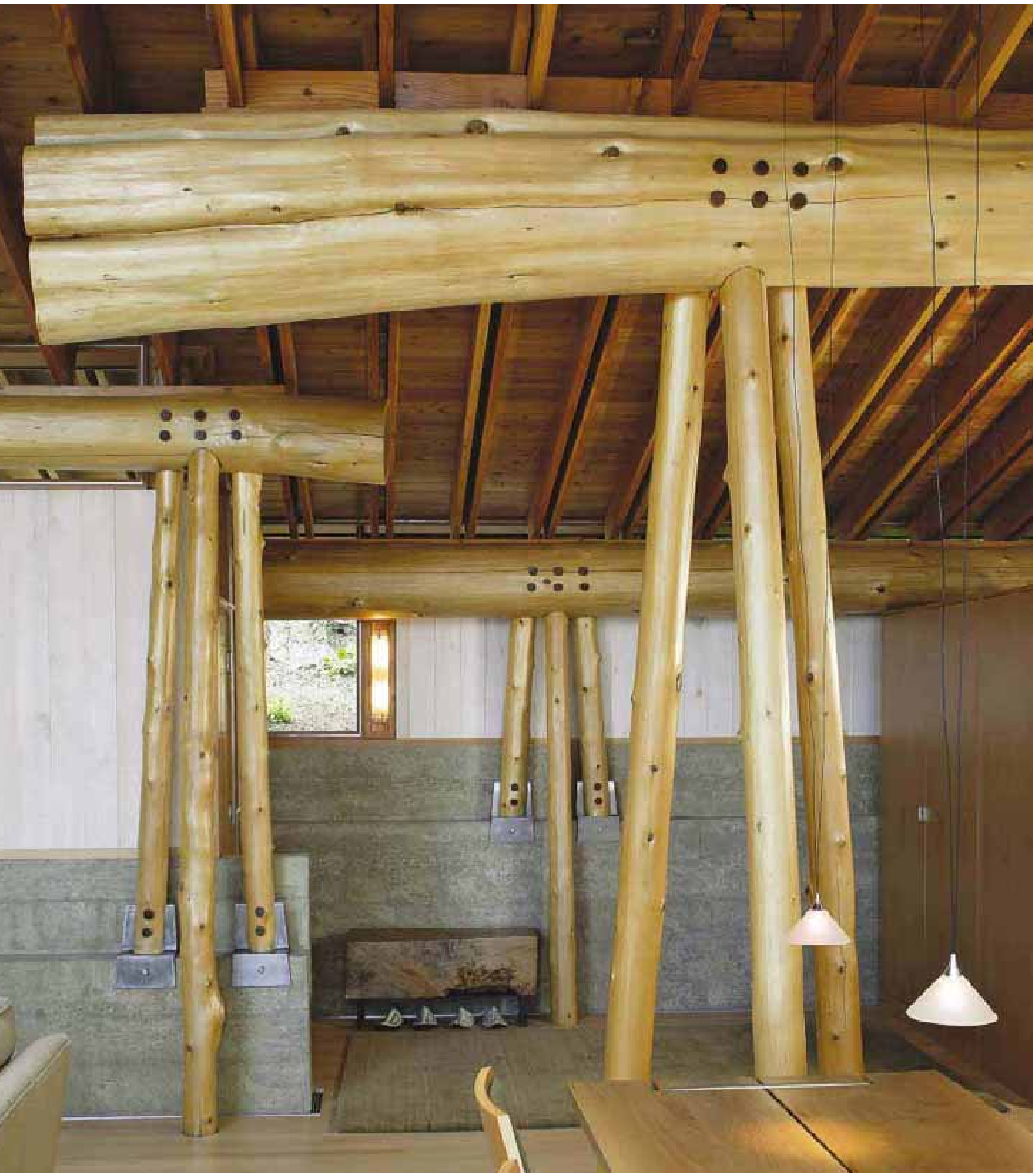
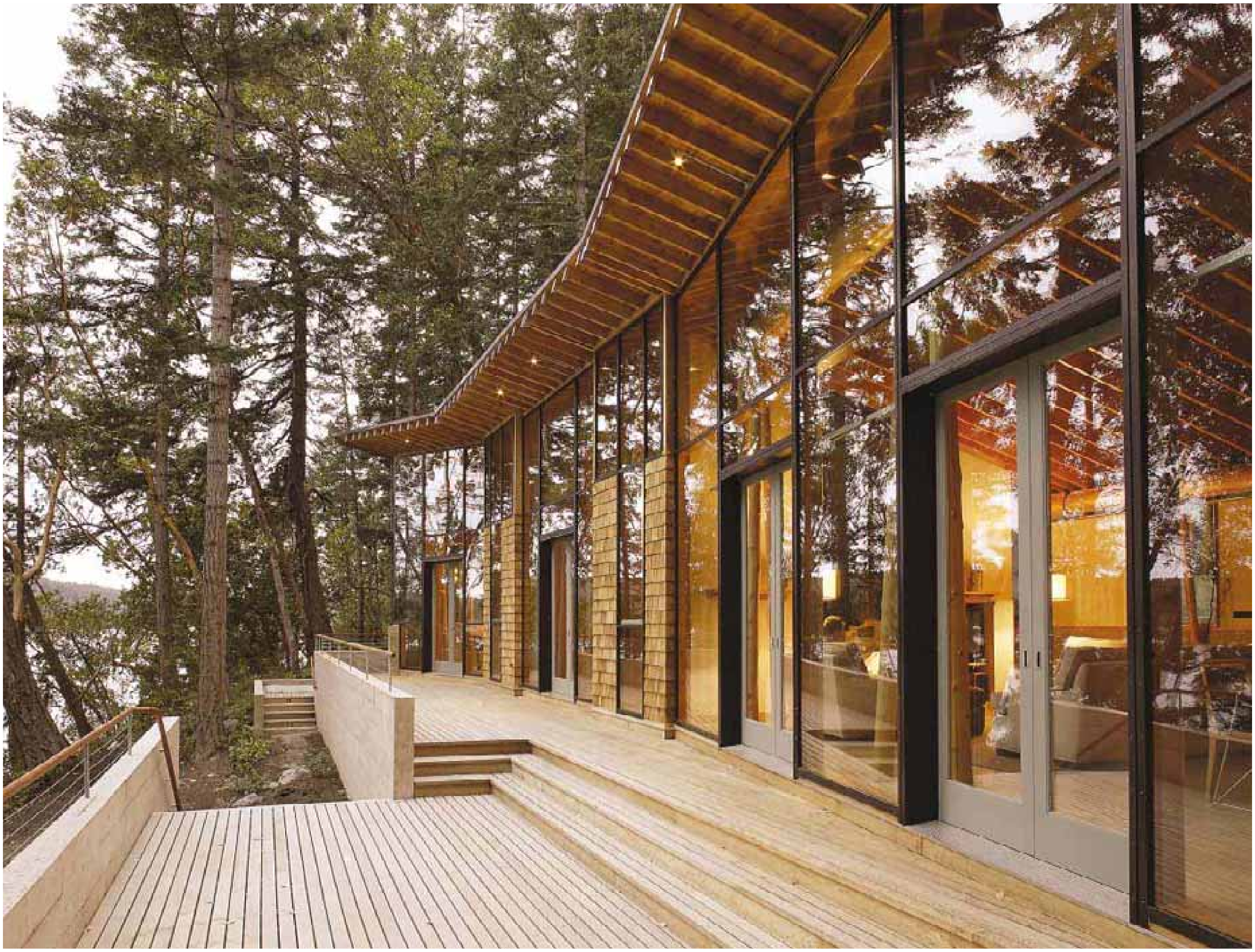


1. *Kitchen*
2. *Dining room*
3. *Living room*
4. *Bath*
5. *Bedroom*
6. *Hot tub*





A deck, supported by a concrete retaining wall, runs the length of the house on the open, windowed side (opposite). The interiors continue the celebration of wood, where western red cedar logs (hoisted onto tripods) reveal their skeletal form, and rafters fit to the top of the log structures (this page). A metal roof tops the entire ensemble (below and opposite).



LIKE GOLDSWORTHY'S SCULPTURE, CUTLER'S WORK MAKES A STRONG STATEMENT ABOUT NATURE AND STRUCTURE.

Responding to the steep, wooded site, Cutler supported the house on 18 sets of peeled-wood tripods engineered to provide enough lateral stability to dispense with conventional shear elements. The tripods were attached to western red cedar log beams by concealed steel plates and bolts. Each was then visually punched through the floor and extended down to a steel connection at the footing. A system of rafters graduated in size relative to span resists the pull of gravity.

Cutler wrapped the building's system of wooden bones in an exterior skin of glass, aluminum, and cedar shingle. He then topped the shell with a layer of two-by-six spacers that support a large overhanging metal roof and create an insulated cavity below it. Given the clients' emphasis on privacy, the shed roof serves to visually insulate the structure from the road above.

Each room in the 2,035-square-foot house opens to the expansive cedar terrace through a set of 8-by-6-foot, custom sliding doors, providing multifaceted views to all the interior spaces. A corridor running the full length of the uphill side of the house provides access to all of the rooms—the main living area, bedroom suite, guest room, and two full baths.

Visitors to the house get their first peek of the building's distinctive wood tripods through low-to-the-ground windows along the uphill entry side. The structural elements reach their full 15-foot-high glory along the glass curtain wall facing the view. As was Cutler's intention, the tripods refer to the trees on the other side of the glass—an idea inspired by Scottish sculptor Andy Goldsworthy's installations involving fallen trees.

Cutler credits his contractor, Lowell Alford, for executing an unorthodox design that combines sophisticated engineering with ancient materials. Alford even harvested the logs from land owned by his father and hired a team of high school students to peel the logs prior to off-site assembly.

Like Goldsworthy's sculpture, Cutler's work makes a strong statement about nature and structure. It's a soft/hard balance echoed in the muted beech-wood floors, the whitewashed pine walls, and the clean lines of the custom wood furniture and cabinetry, much of which was designed by Cutler himself. ■

Sources

Metal roofing: *Taylor Metal Products*

Upholstery: *National Furniture Company*

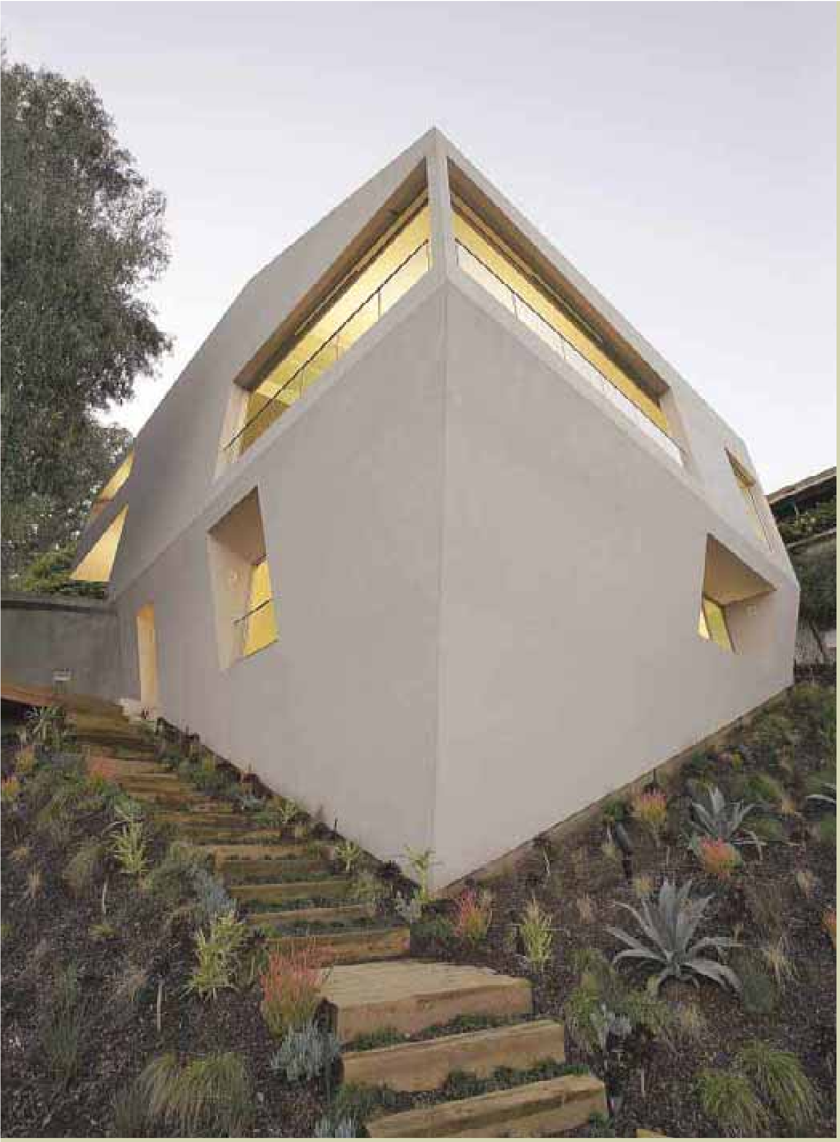
Lighting: *Tech Lighting; Venzia Light Fixtures*

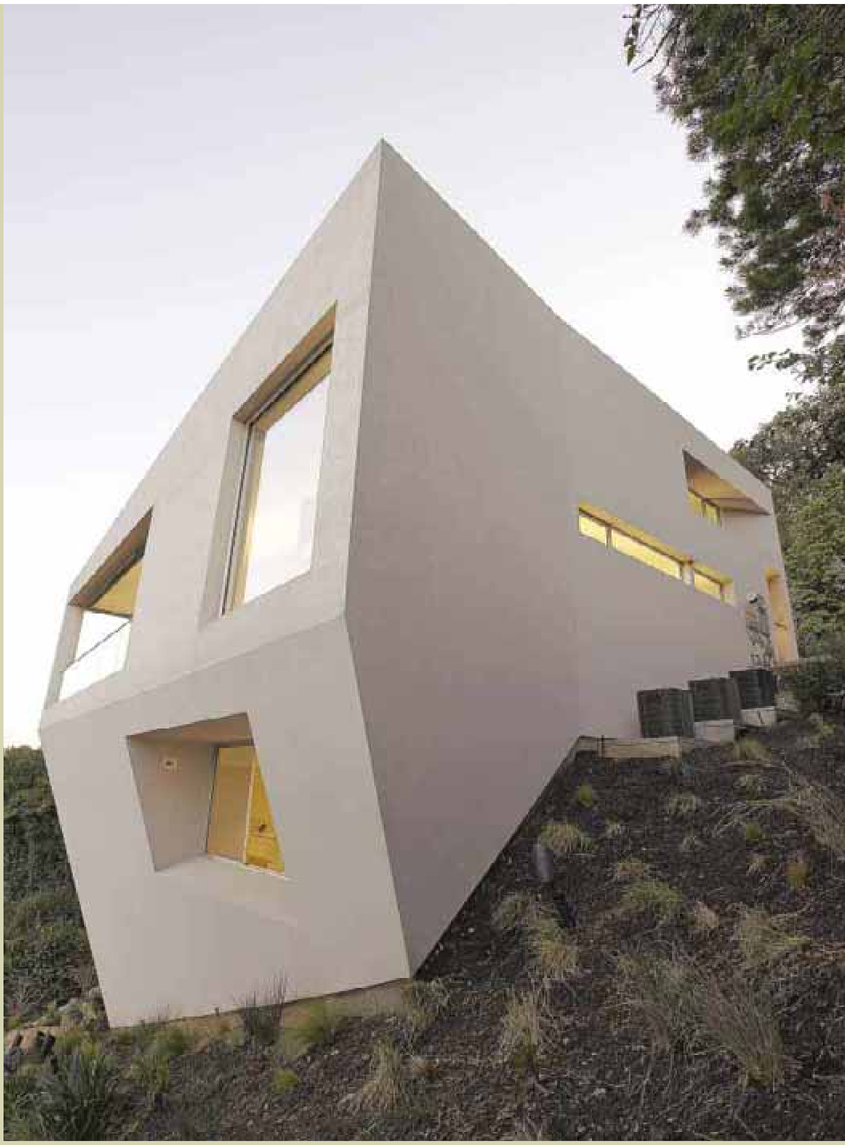
Windows and window walls: *Custom-designed by Jim Cutler*

Sliding doors: *Custom-designed by Alford Homes*

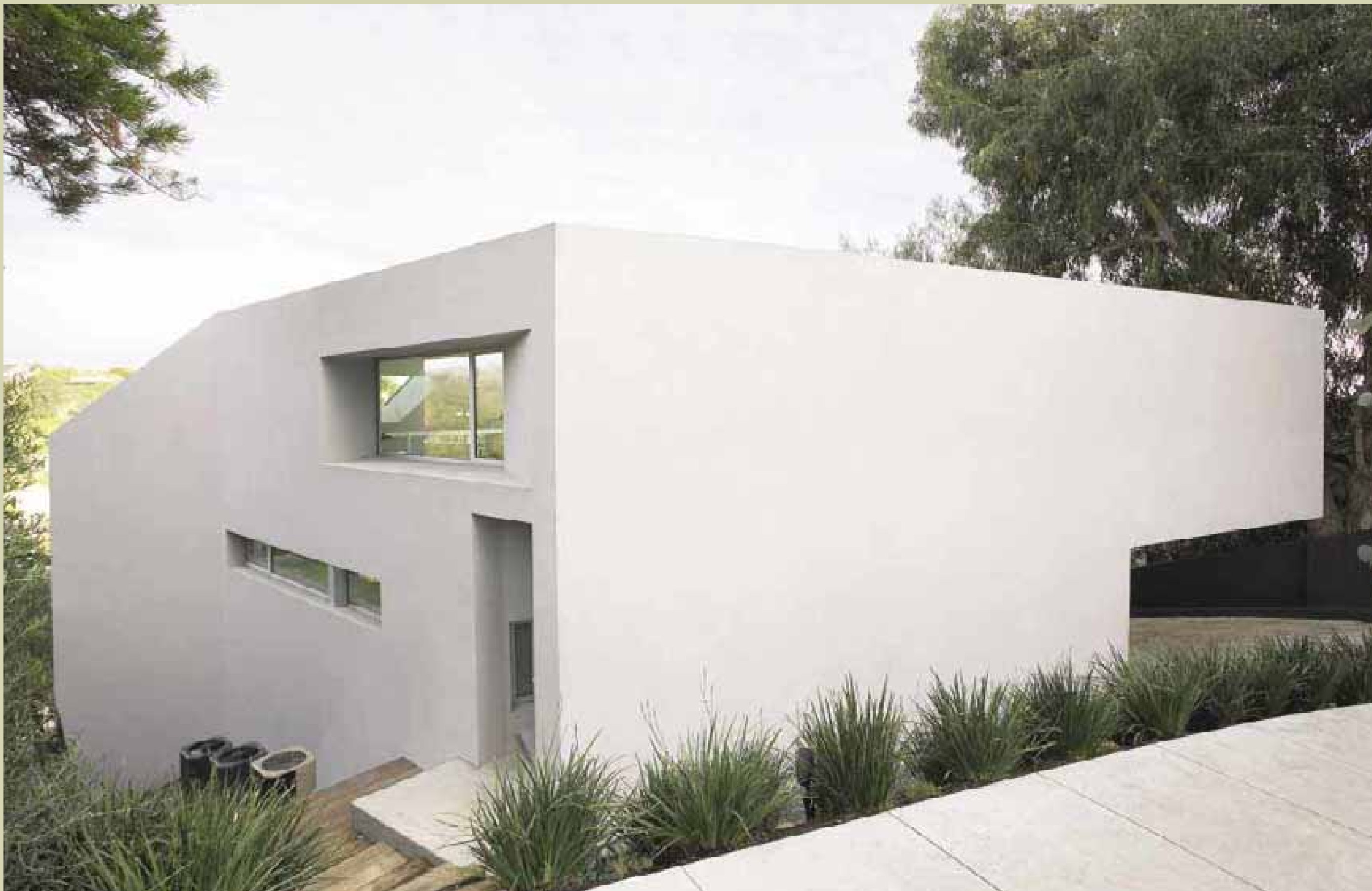
Cabinets and woodwork: *Custom-designed by Cutler Anderson Architects*

For more information on this project, go to Residential at **www.archrecord.com**.

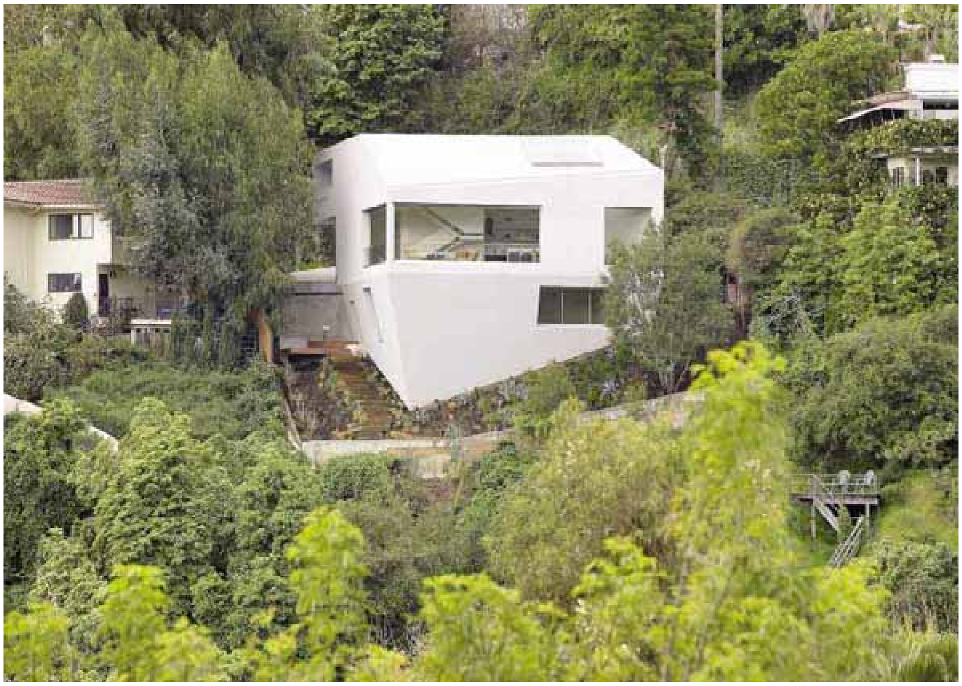




The house perches on an uneven downhill slope, affording dramatic views of the Santa Monica Canyon. Three levels are stacked within the concrete volume, colored an iridescent lavender, which changes with the light. The architect says the color was derived from that of the eucalyptus trees prevalent on the site.



Johnston Marklee's **Hill House** perches on a precipitous site like a faceted diamond

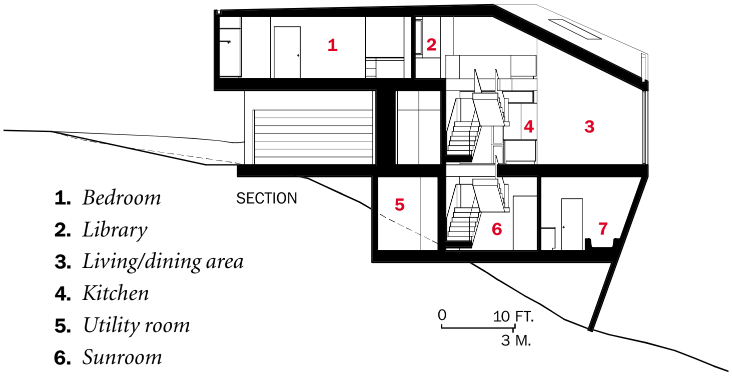


By Michael Webb

Some of the best wine is made from vines that have to struggle for a foothold on steep slopes, and the same is true for residential architecture in Los Angeles. Starting with Wright, Schindler, and Neutra in the 1920s, architects have developed inventive solutions for precipitous sites in Silver Lake, the Hollywood Hills, and west to Malibu. Few undeveloped plots remain, and the partnership of Sharon Johnston and Mark Lee was challenged to build a spacious spec house on a small and irregular plot of land that drops unevenly from a busy street to command a panoramic view over Santa Monica Canyon. The local Hillside Ordinance limits height (48 feet from the lowest point) and bulk in an effort to preserve the rustic character of the canyon. An earlier, failed attempt to build on the site would have required 23 caissons to meet the city's stringent seismic code.

The architects turned these constraints to advantage by tapering their three-level block at the top and bottom. This allowed them to minimize the footprint, reduce the number of costly caissons to nine, and free up space for a backyard, while maximizing the volume within the zoning envelope. The form emerged as a response to the site and regulations, and the architects massaged it in physical models and with Form Z software until they had sculpted a 3,600-square-foot interior. In contrast to other attempts to max out the site, the Hill House seems to grow organically from the slope, much like John Lautner's celebrated Chemosphere House. Its chamfered elegance also recalls the massing diagrams for New York skyscrapers that Hugh Ferris transformed into works of art.

Michael Webb is the author of many books on architecture and design, most recently Art/Invention/House *and* Adventurous Wine Architecture. *He lives in a Richard Neutra hillside apartment near UCLA.*



SECTION

1. *Bedroom*
2. *Library*
3. *Living/dining area*
4. *Kitchen*
5. *Utility room*
6. *Sunroom*
7. *Master bath*

The design and permitting process stretched over 18 months, at a time when the two partners were completing the Sale House—a modest cluster of gray cubes on a flat site in Venice, California. When the

Project: *Hill House, Pacific Palisades, California*
Architect: *Johnston Marklee & Associates—Mark Lee, principal in charge; Sharon Johnston, AIA, Jeff Adams, Mark Rea Baker, project architects*
Engineers: *William Koh & Associates (structural); CC & R (civil); Jim Sadler (glass)*
Consultants: *Lush Life LA (landscape); Dan Wienreber (lighting); Jack Pierson (artist/color)*
General contractor: *Hinerfeld-Ward*

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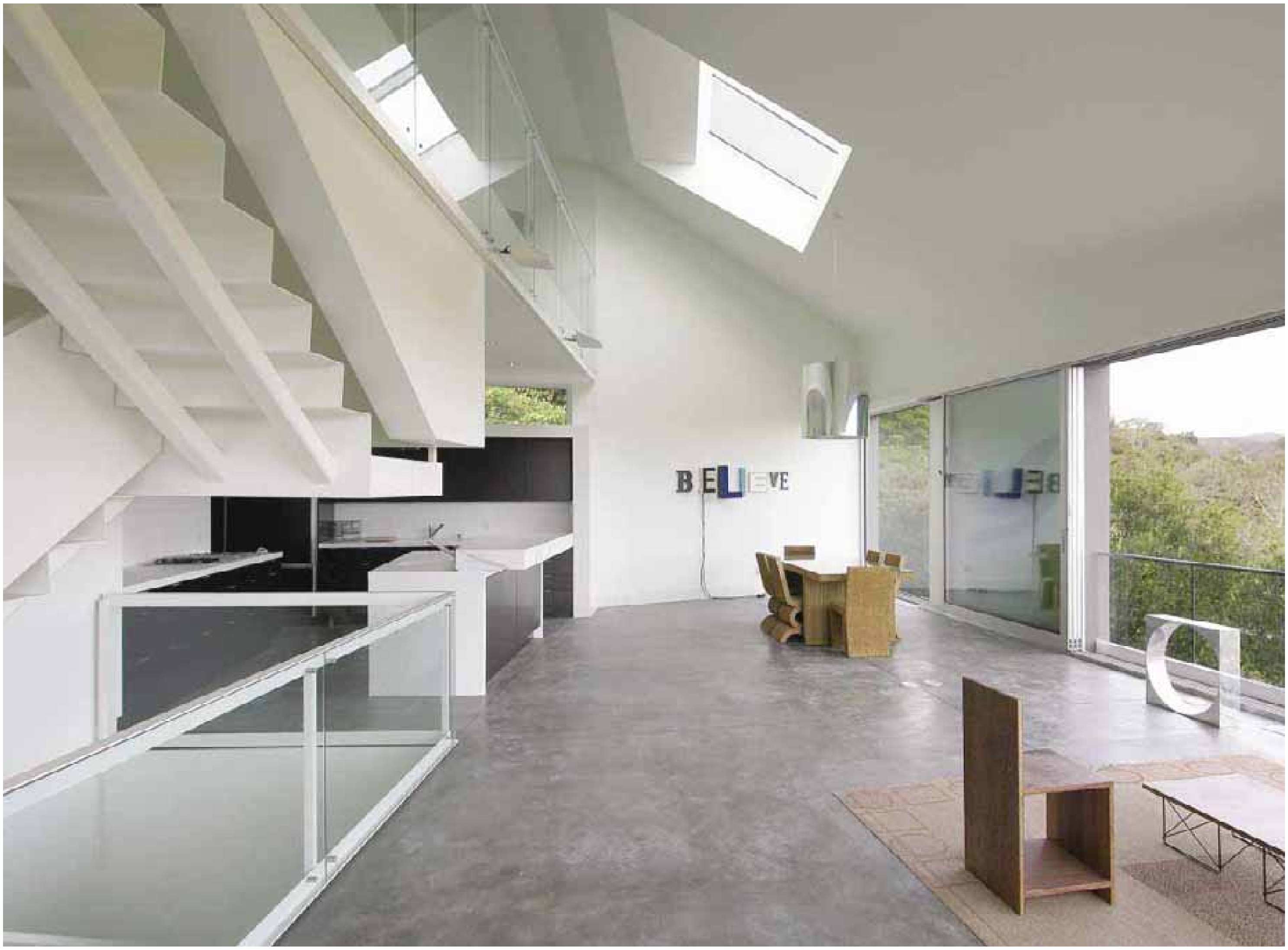


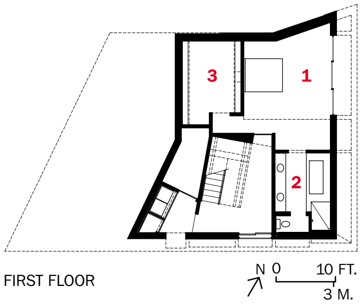
The dramatic space of the living/dining room floor opens to views on one side. On the other side, a central steel staircase provides access to the home's three levels.

client had second thoughts and put the plot and plans up for sale, the architects persuaded family friends to become investors so they could carry the project to completion. Two years later, the house was done, and the architects quickly found a buyer in Chan Luu, a Vietnamese-American who designs cutting-edge jewelry and clothes. The shape reminded her of a faceted diamond, and she found the interior to be an ideal fit.

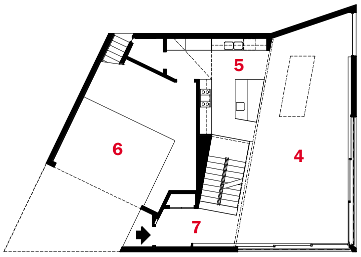
The two outer walls of the poured-concrete base are tilted perpendicular to the 47-degree slope, working in compression with the inner retaining walls, while tie beams within a concrete deck anchor the house at the top of the slope. A faceted steel cage encloses the mezzanine, with the bedroom cantilevered over the garage at street level. This structural frame is concealed by a layer of a waterproof and elastic polymer-based mix that was troweled onto a substrate of ¾-inch plywood, creating a seamless skin that unites the angled planes. The textured envelope catches the light and conceals minor imperfections, while its pale lavender hue echoes the color of the neighboring eucalyptus trees.

> THIS IS A LITTLE HOUSE THAT THINKS BIG WITHOUT OVERWHELMING ITS NEIGHBORS.

The house abuts a street that cascades down, past a well-hidden

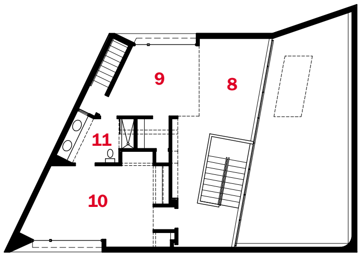


FIRST FLOOR

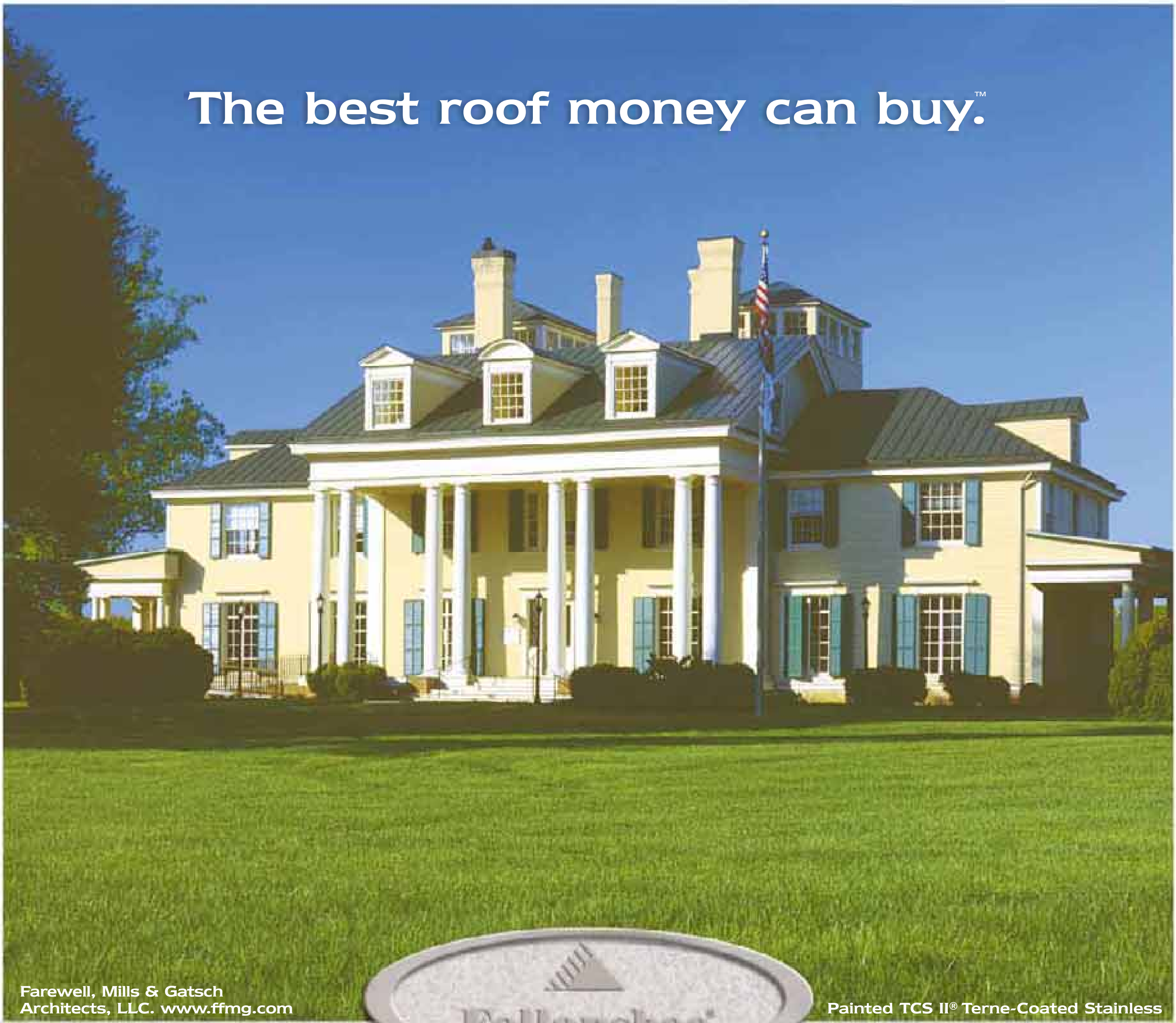


SECOND FLOOR

1. *Master bedroom*
2. *Master bath*
3. *Master closet*
4. *Living/dining area*
5. *Kitchen*
6. *Garage*
7. *Entry*
8. *Library*
9. *Study*
10. *Bedroom*
11. *Bath*



THIRD FLOOR



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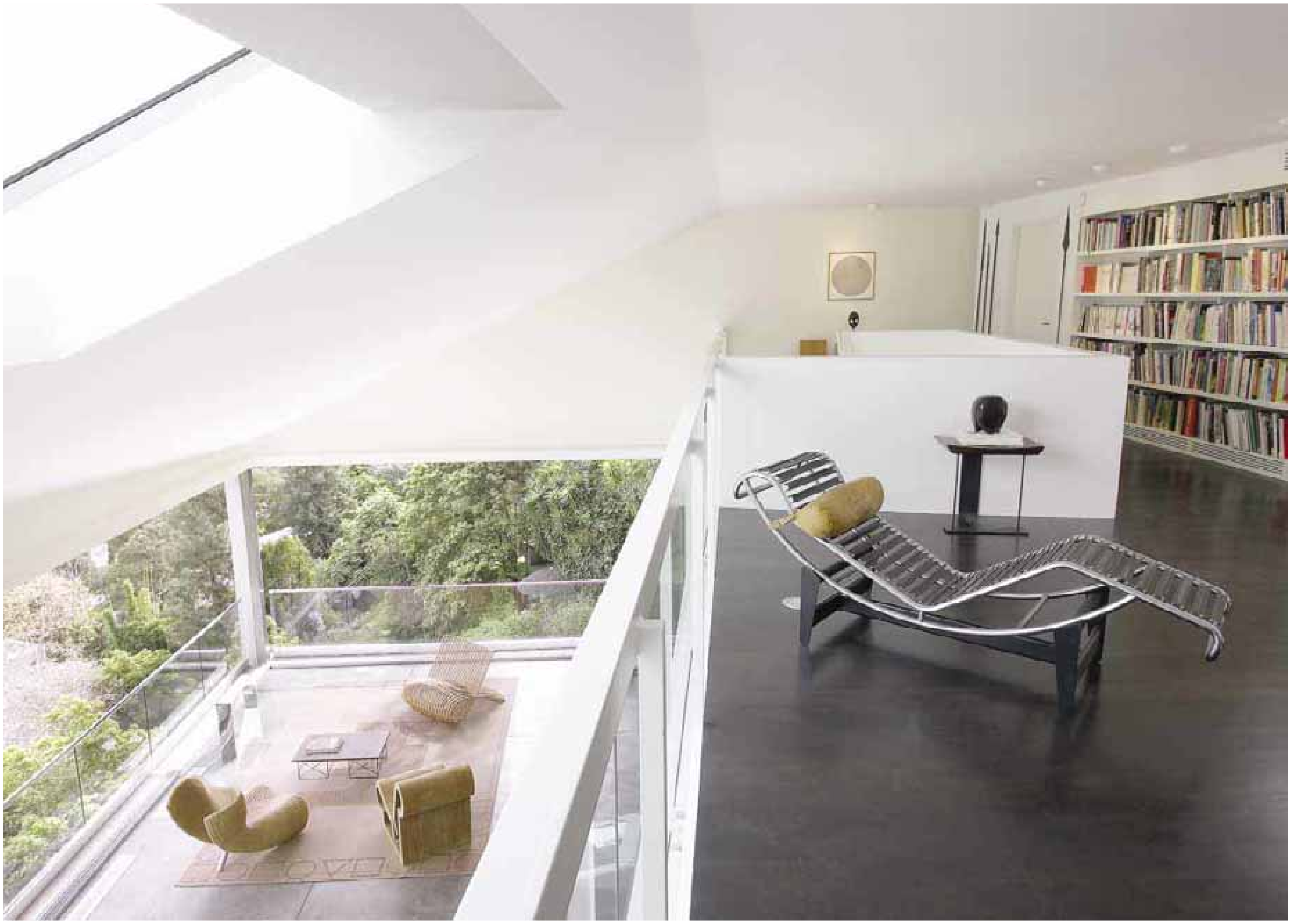
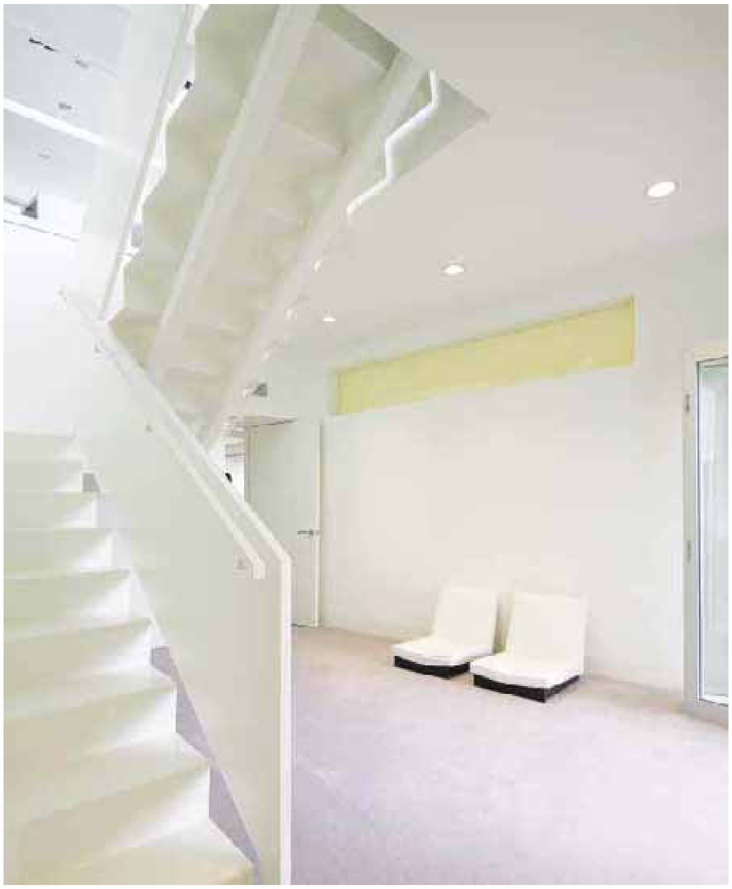


The shifting angles and tilted planes of the radiant, light-filled interior convey an expansiveness that belies the modest size of the spaces (this page and opposite). A mezzanine overlooks the living-room area (above).



Eames House and to the Pacific Coast Highway. An enigmatically blank facade, broken only by a single recessed slot above the garage, baffles noise from the street and assures privacy. The white, light-filled interior offers a dramatic contrast. Stairs link the master suite on the lowest level in the base to the living-dining area and kitchen, which are tucked below the library off a mezzanine gallery.

The ceiling slopes sharply down and the mezzanine is slightly rotated to force the perspective. A folded steel staircase with high parapets and deep-set window openings framing treetops add to the drama. Spaces flow easily into each other and out through pocketing glass sliders that open up two sides of the living area to the wooded canyon.

The interior spaces have an expansiveness and energy that belies their modest dimensions. This is a little house that thinks big without overwhelming its neighbors. ■

Sources

Roofing/exterior cladding: *Grailcoat*

Windows: *Fleetwood (aluminum); R & C Glass (glazing)*

Skylights: *Sun Valley Skylights*

Lighting: *Lightolier; Liton; Alkco*

Plumbing: *Dornbracht; KWC; Duravit; Corian*

Tile: *Dal Tile*

For more information on this project, go to Residential at **www.archrecord.com**.

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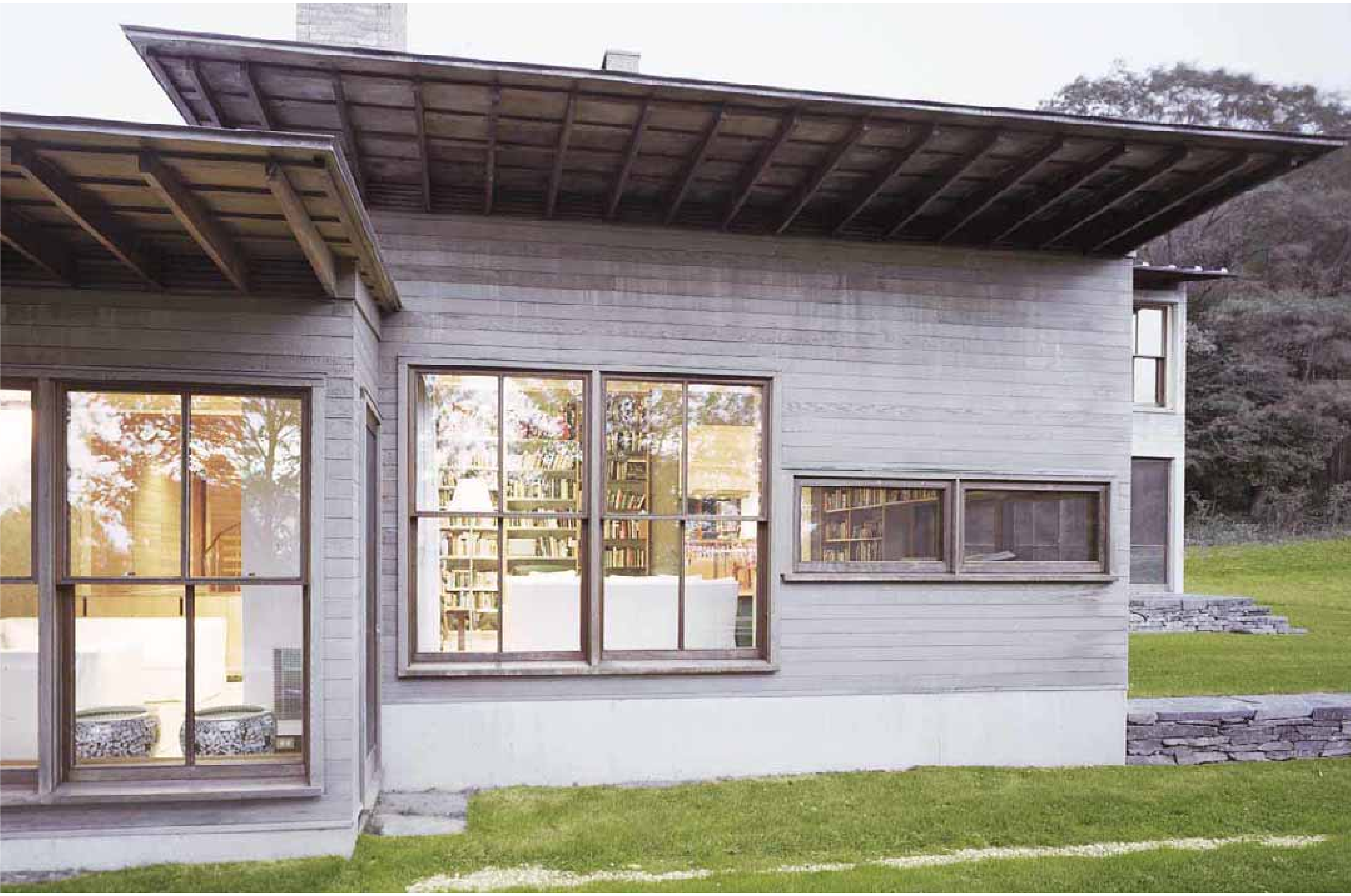
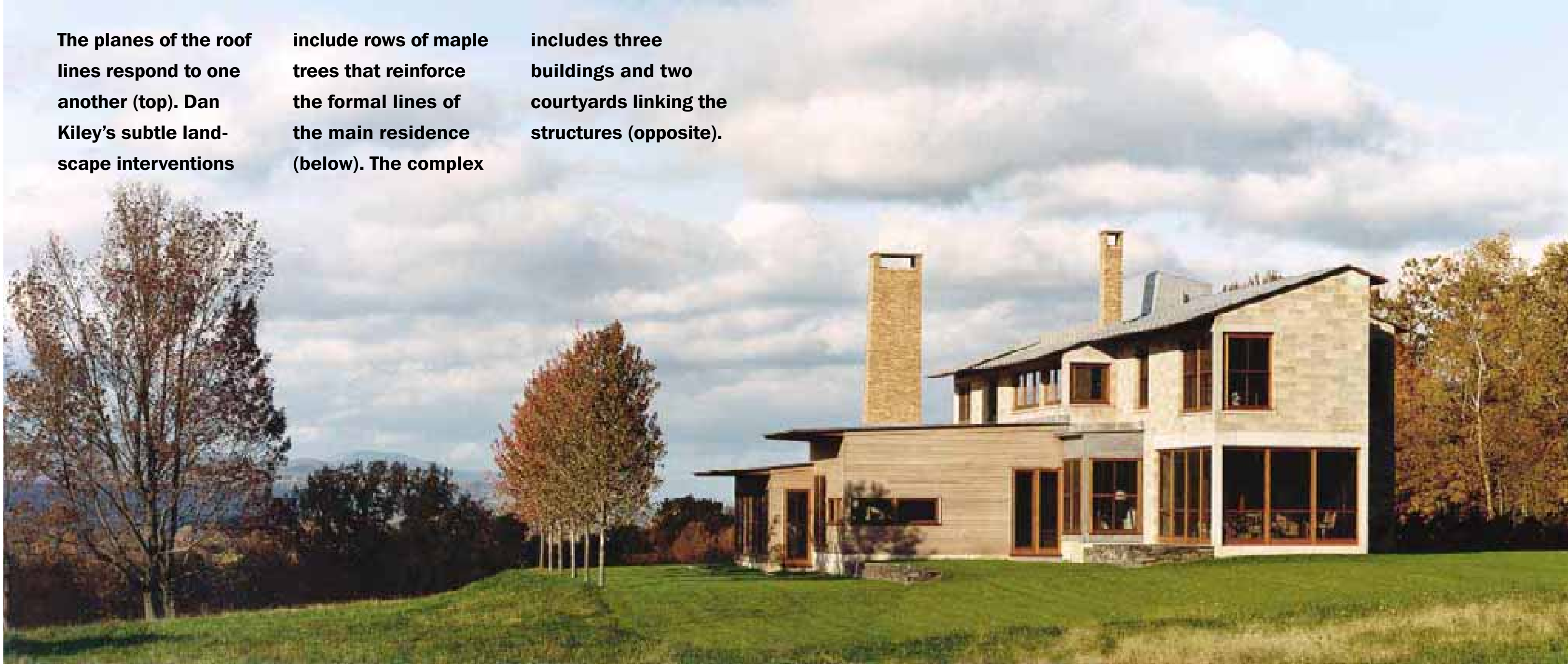


The planes of the roof lines respond to one another (top). Dan Kiley's subtle landscape interventions include rows of maple trees that reinforce the formal lines of the main residence (below). The complex includes three buildings and two courtyards linking the structures (opposite).



Nature and the man-made join harmoniously at Peter Rose's **Art Studio and Residence**

By Jane F. Kolleeny

PHOTOGRAPHY: © ANDY BUSH (OPPOSITE, TOP); ANTON GRASSI (THIS PAGE AND OPPOSITE, BOTTOM)

The pace is slow in Sharon, Connecticut, a picturesque village in Litchfield County, located in the northwest corner of the state. Reminders of the area's colonial past are evident in the covered bridges and mossy stone walls abundant there. Weathercock Farm, among the many old farms that dot the landscape, consists of a 100-acre tract of land with barns formerly used for livestock. Purchased by a couple and their teenage daughter in the late 1990s, the farm itself was easily revived with 100 Angus cattle, but the site lacked proper accommodations for the new homeowners.

The owners started work on their home by hiring Cambridge, Massachusetts, architect Peter Rose, AIA. While they began the design process with visions of white clapboard on the exterior, a material common in the residential architecture of New England, they ended up with concrete block, a choice that both surprised and delighted them.

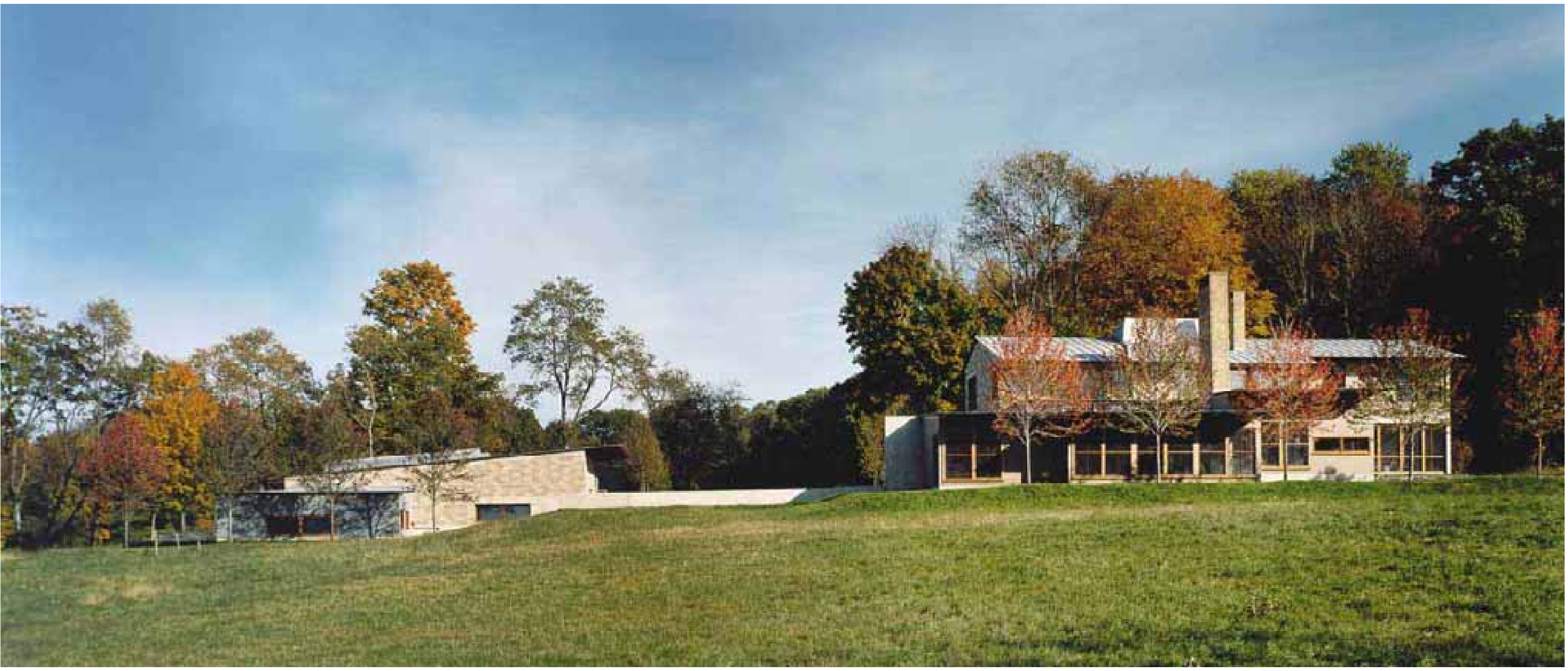
"Most homeowners think they know what they want and then go about the task of pursuing an outcome," said Rose. "In this case, the owner put conventional thinking aside and engaged in a process with me, founded on the belief that 'not knowing' is the best place to begin, and white clapboard simply did not evolve as the material of choice."

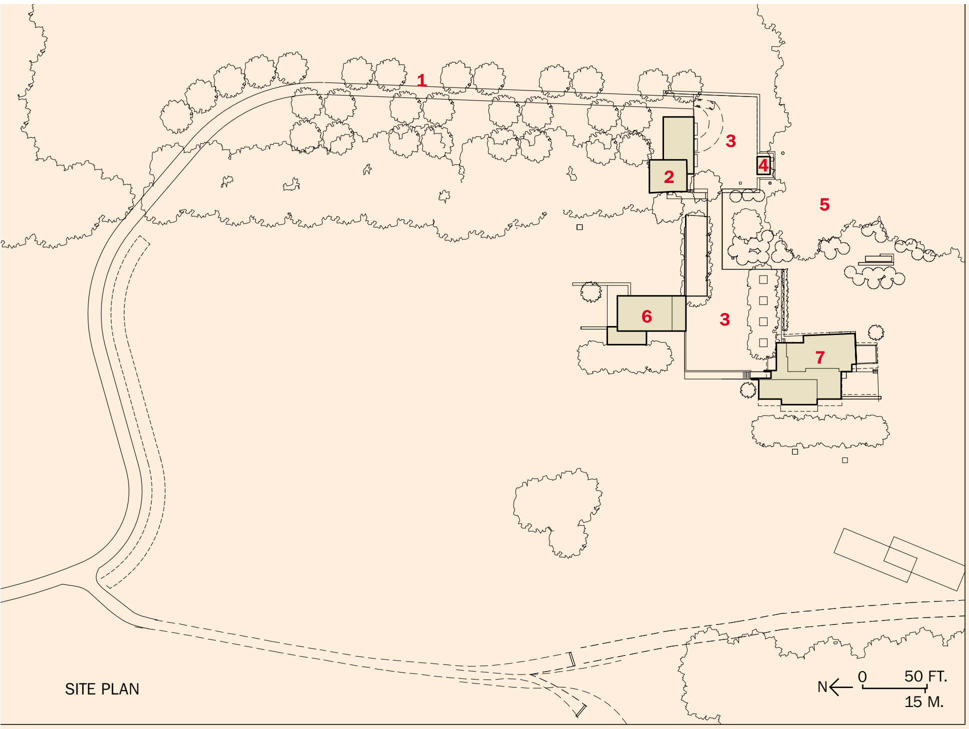
Instead, a three-building compound emerged, consisting of a main house, an artist's studio, and garage/guest quarters. As visitors turn onto the the property's dirt road, they are greeted by the red barns of the farm and the wary gaze of the cattle. The road meanders up a hill, where a sequence of subtle gestures—a woodpile, a stone wall, a gravel drive—signal domesticity. Approaching from behind the buildings into one of two courtyards, visitors first see the garage/guest suite, then the art studio on the right, and the main house on the left. The ensemble rests comfortably on the edge of a grassy field, sitting back from the crest of a hill, "capturing the views but not getting in their way," as one of the owners observed.

Along with the unexpected use of concrete block, the architect specified a lead-coated cooper roof, tongue-in-groove stained cedar siding, and two brick chimneys on the main house, all of which help the building blend with the muted hues of the landscape. The art studio and guest quarters pick up the theme. Visually, the group of buildings are so thoroughly rooted in the environment that they seem defined from without, rather than from within.

The main house is sliced in half longitudinally with a hallway that reaches from one end to the other, defining a border between the public one-story areas that open to views on the west, and the private two-story program behind. The living room, library, and office face westerly views, while the kitchen, dining, bath, and laundry room compose the back-lying areas of the main floor, with bedroom suites forming the

Project: *Art Studio and Residence, Sharon, Connecticut*
Architect: *The Office of Peter Rose*
Consultants: *Arup (engineer); Office of Dan Kiley (landscape)*
General contractor: *Dick Coon Construction*

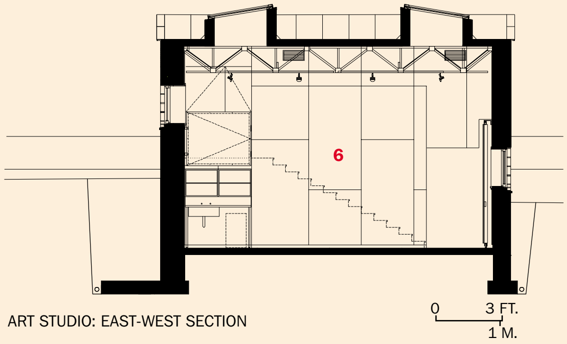




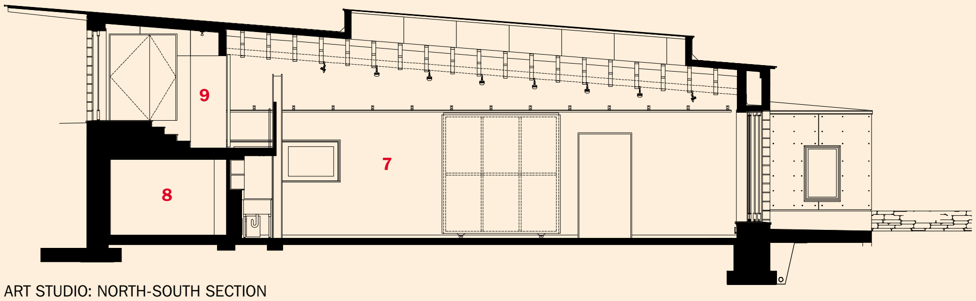
SITE PLAN

1. *Entry road*
2. *Guest quarters/garage*
3. *Courtyard*
4. *Firewood storage*
5. *Existing stone walls*
6. *Art studio*
7. *Main house*
8. *Storage*
9. *Entry from courtyard*

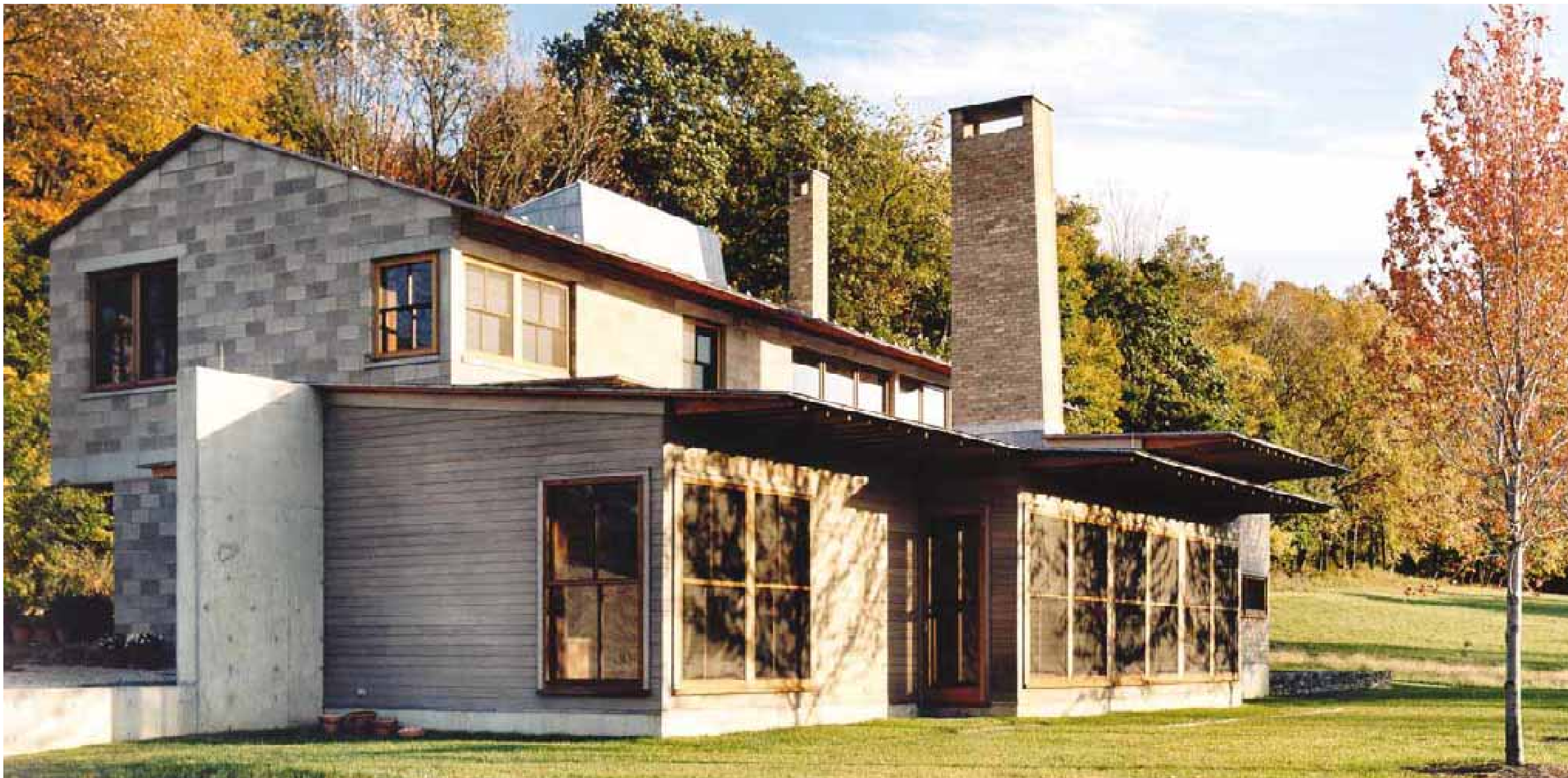
Adjustable built-in shelves in the library are custom-designed in wood and stainless-steel (opposite, top). An end-to-end hallway in the main house delineates public and private spaces (opposite, bottom). The exterior walls of the main house are composed of concrete block and tongue-in-groove cedar siding. The building is topped by two brick chimneys (below).

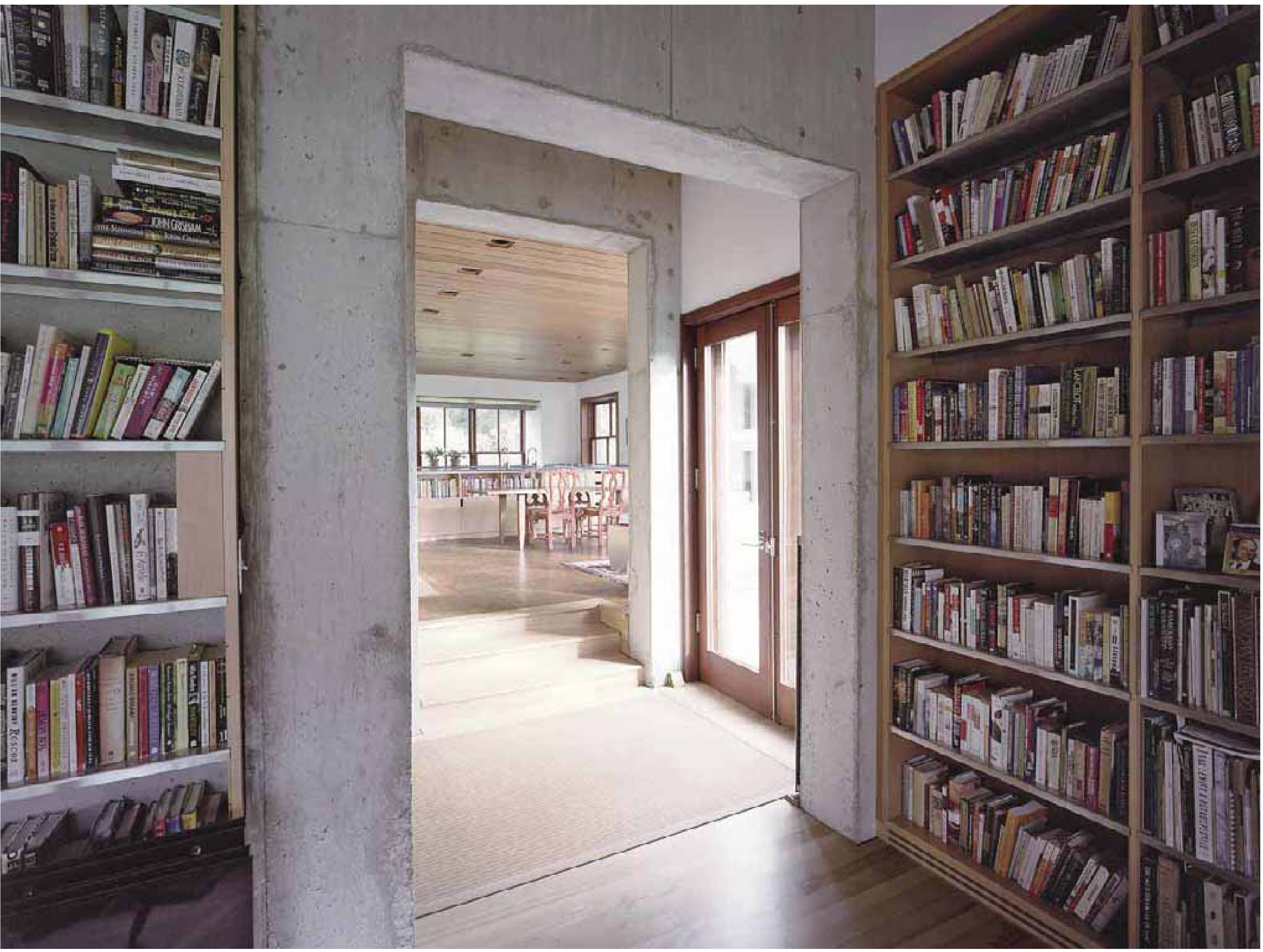


ART STUDIO: EAST-WEST SECTION



ART STUDIO: NORTH-SOUTH SECTION





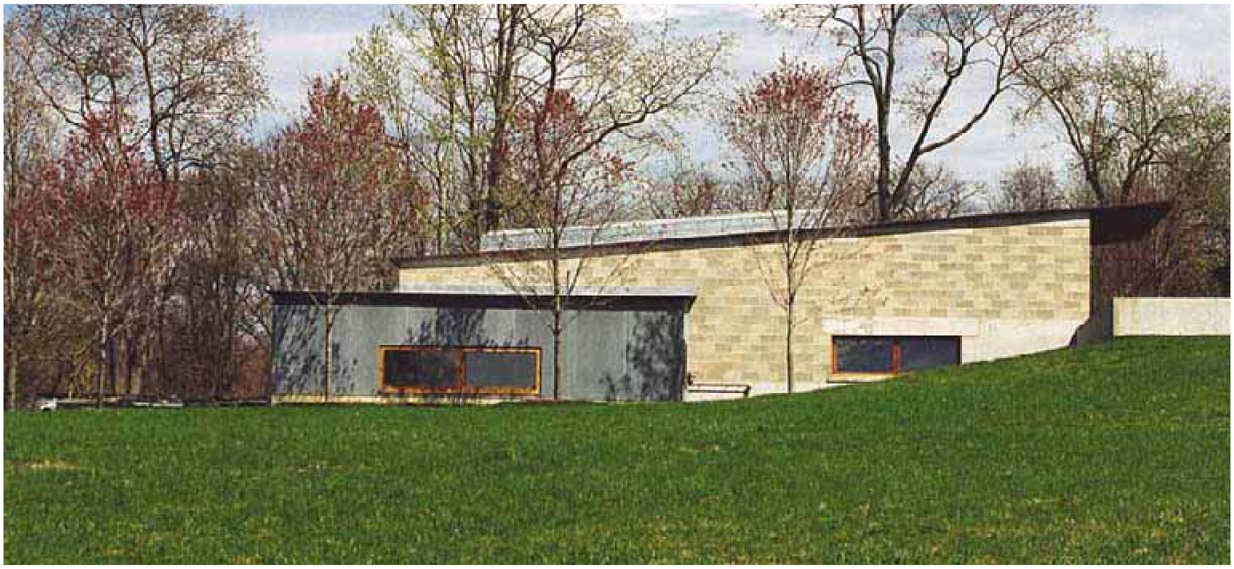
PHOTOGRAPHY: © ANTON GRASSI (OPPOSITE); ANDY BUSH (THIS PAGE)

second story, all tucked into the slope of the land. Landscape architect Dan Kiley, with whom Rose frequently collaborated before Kiley's death in 2004, extended and reinforced this formal line of demarcation into the landscape with several rows of maple trees running parallel to it.

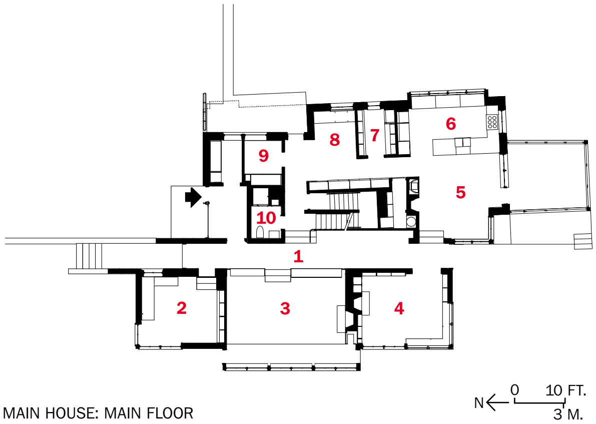
Inside, architecture, furniture, and art mix modern and country metaphors in a sensitively arranged composition of color and form. The concrete-block walls of the house are rough-hewn, a quality both architect and owner appreciated. Red cedar wood paneling camouflages a multitude of built-ins, nooks and crannies, and ample storage cabinets for the typical clutter of daily living. Due to the absence of overhead cabinets, light in the kitchen remains unobstructed, with storage below the granite counters.

All the windows are framed in mahogany, custom-made by master craftsman William Parry. Three fireplaces with Kasota stone mantles warm up the interiors, and custom hemp rugs of neutral color add an elegant, understated touch. The wife, a painter, has strategically mounted large Modernist paintings in the house, skillfully playing them off the Minimalist design of the architecture.

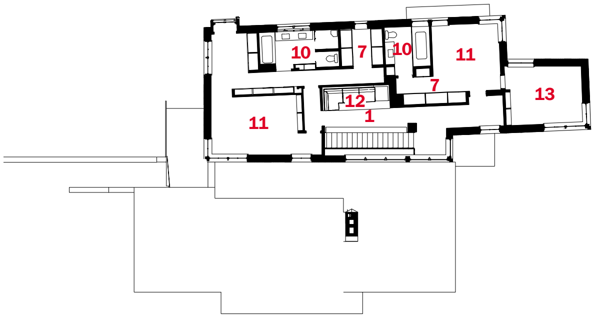
The art studio features an open work area, offices, and utility spaces. Daylight floods the work space, tumbling from skylights, high window cavities, and floor-to-ceiling windows on the north, which slide into wall openings to create an outdoor gathering area with views of far-



Abundant light from tall windows, skylights, and high window cavities illuminates the work space in the art studio (left). Windows on the north side of the studio open to an outdoor gathering area (bottom). In the main house, a screened porch is reached off a dining/ sitting room (opposite).

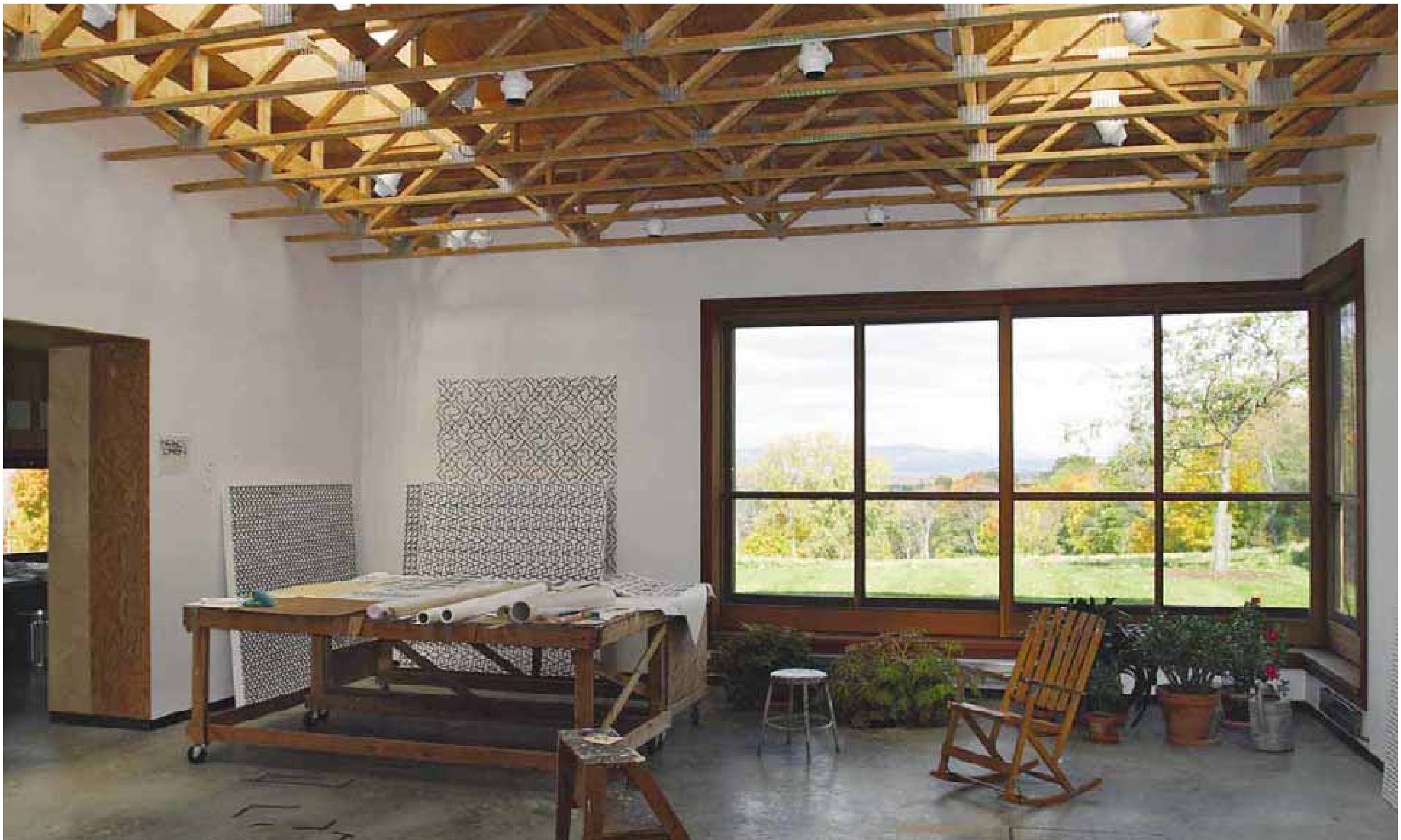


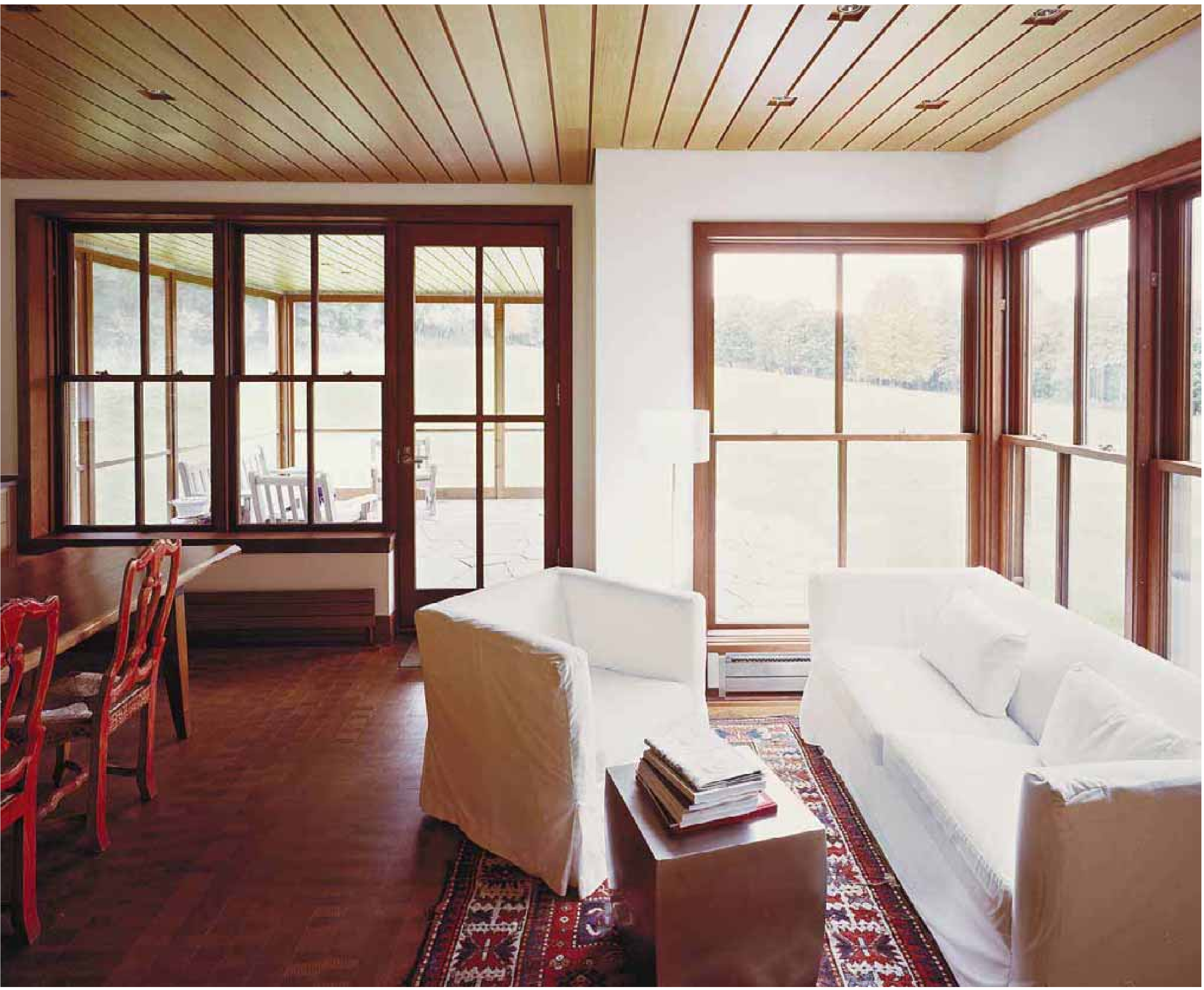
MAIN HOUSE: MAIN FLOOR



MAIN HOUSE: UPPER FLOOR

1. *Hallway*
2. *Office*
3. *Living room*
4. *Library*
5. *Dining/sitting room*
6. *Kitchen*
7. *Storage*
8. *Laundry*
9. *Mudroom*
10. *Bath*
11. *Bedroom*
12. *Reading area*
13. *Study*





PHOTOGRAPHY: COURTESY OFFICE OF PETER ROSE (OPPOSITE, TOP); ANDY BUSH (THIS PAGE AND OPPOSITE, BOTTOM)

off mountains. After working on a painting, the wife can step out onto the porch, where a single fruit tree deftly planted by Kiley provides perspective to the distant views. In the last building of the complex, one finds modest-size guest quarters and a generous three-car garage with roll-up industrial steel doors.

Not immediately evident to the onlooker, order and irregularity combine in interesting ways throughout the buildings. For example, the front of the main house is not symmetrical with the back, which is rotated away, bending to open to views and gain space where needed. In addition, the threshold on the guest house entrance is not parallel to the door, and the walls of some of the structures are not perpendicular to one another. Asymmetry both creates interest and accomplishes certain tasks, such as enlarging a room and opening it up to light. Says Rose, "During my career, I have become interested in misalignment, without it being an error, trusting my instincts to allow things to adjust asymmetrically for some experiential purpose. This introduces a kind of irritant or odd note to a fairly disciplined thing, sliding and rotating volumes with precision and grace."

The total square footage of the ensemble is 10,000, yet the buildings, broken into discrete parts as they are, convey modest dimensions. "The north and south fields would suddenly be measurable and finite if a big lumbering house were sited there," Rose explains. By breaking up the house into pieces, the field remains unified both within itself and with the parts of the complex.

Rose refers to his work as a conversation between the volumes of the house and the landscape. The parts of the whole play a melody: The planes of the rooflines, for example, respond to each other. At the same time, the contrast between concrete and wood will slowly erode from the weather, trees will mature and cover the walls, and walls will become stained. Over time, nature and the man-made will continue the evolution of melding with each other in ways that white clapboard could never have accommodated. ■

Sources

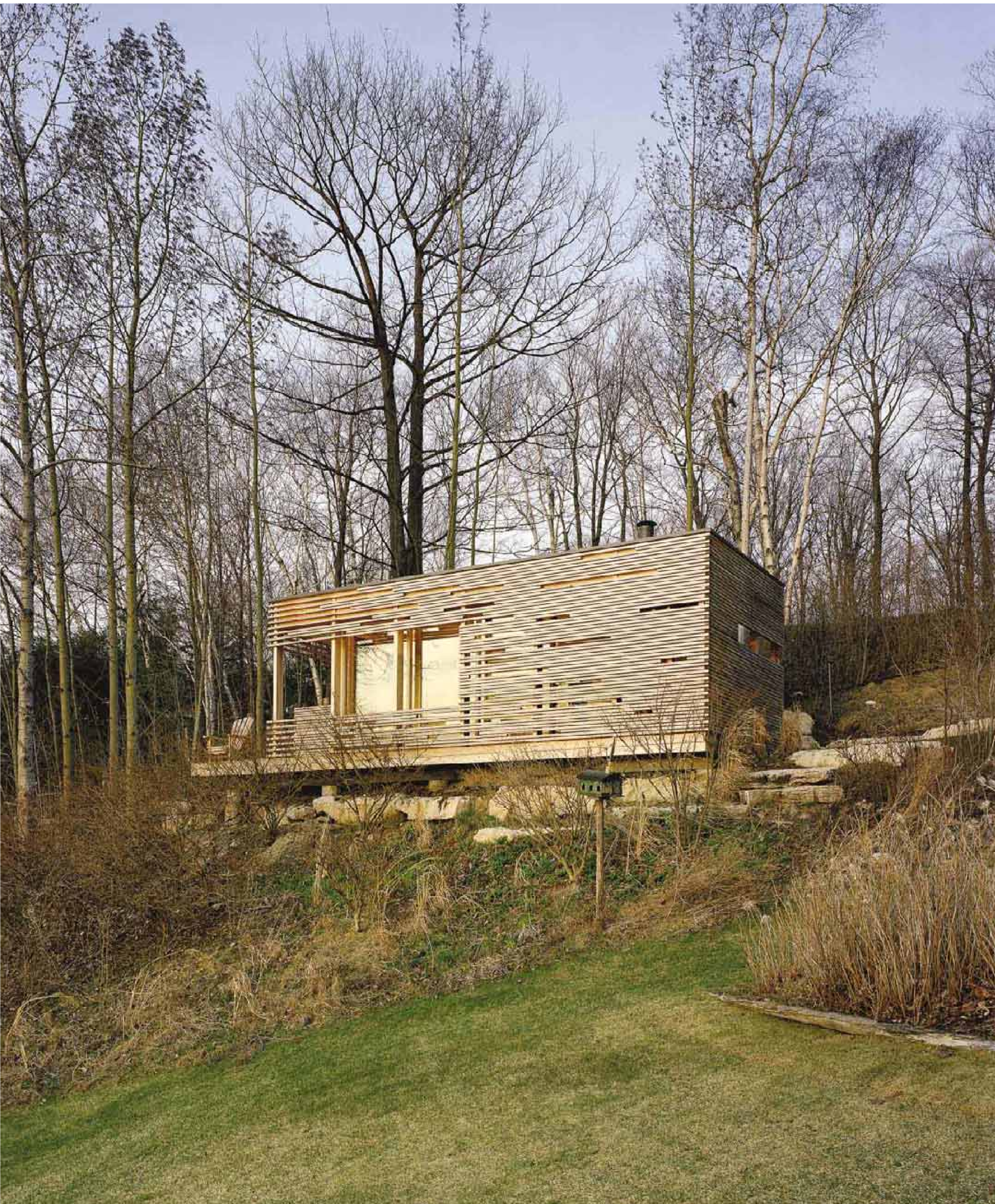
Windows: *William Parry Window Company*

Cabinetmaker: *Menuiserie Mont Royal*

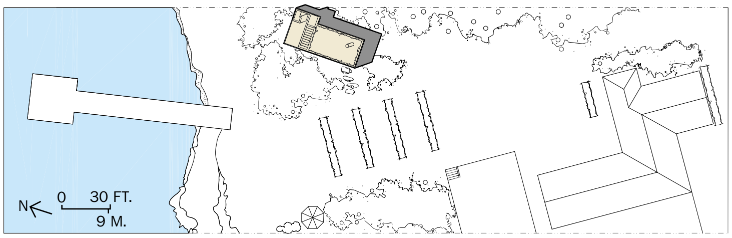
Kitchen floors: *Caswell Flooring*

Cement board: *CemBonit*

For more information on this project, go to Residential at **www.archrecord.com**.



Taylor_Smyth architects' **Sunset Cabin** ages gracefully in its hillside context



By Kelly Rude

Though three generations of Toronto's well-heeled have had cottages at Lake Simcoe, one hour's drive north of the city, outsiders would never guess the modest cabins were here, never mind occupied. But the rustic and romantic true grit of Toronto's last century of style is still very much alive, at least in this neck of the woods.

"My clients hike and camp when they're here," Toronto architect Michael Taylor explains on the drive up to Sunset Cabin, on an autumn day with maples at their prime, bathed in a light at once crisp and clear, soft and mellow. "It is about the light and the views," says Taylor, as we approach his clients' main cottage with a west view to the lake.

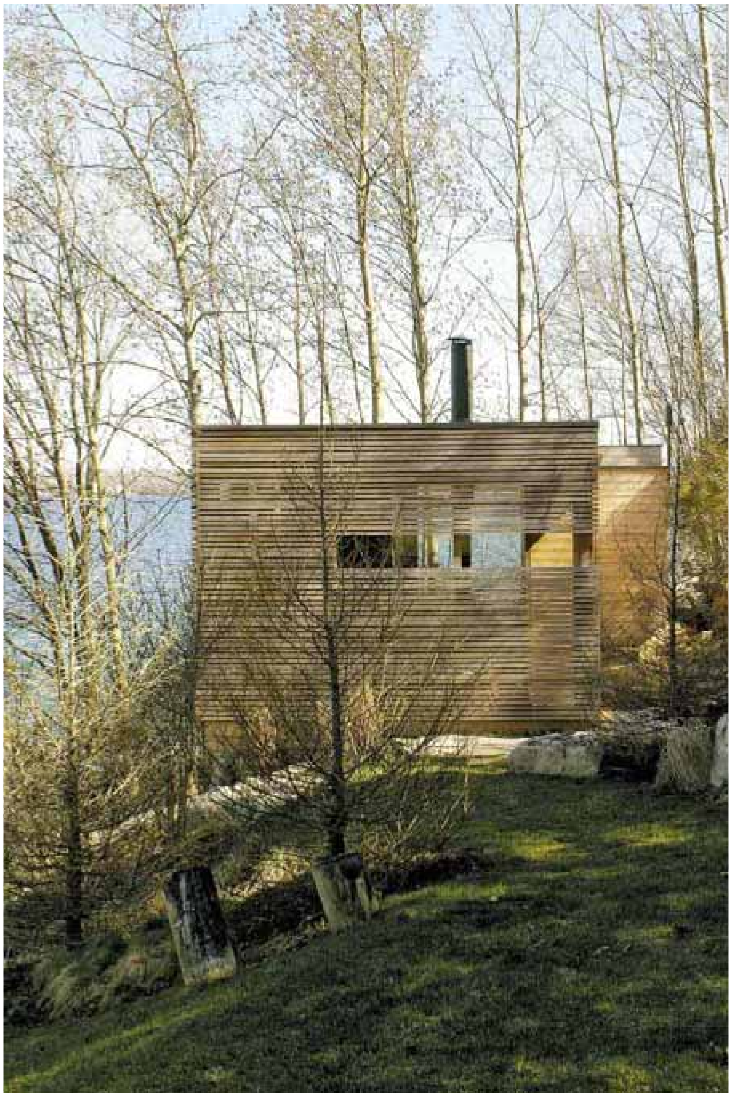
The cottage owners, a couple, commissioned Taylor_Smyth architects to design a private cabin separate but related to the rest of an eclectic mix of sleeping shelters (one is simply a canvas tent stretched on a wood frame) that dot the 1-acre property. The couple, their four adult children, and a steady flow of visitors ensure that the main house and three sleeping cabins on the property are occupied. While two of the cabins are near the main house, this one is about 150 feet away, perched on a rock on a hillside that gently slopes toward the lake.

"We needed to get away from everyone and have a space of our own," explains the wife. "Because at any one time there could be 10 to 15 people sleeping over." Previously, she and her husband would take refuge in one of the five bedrooms in the main house, which buzzed with energy whenever a crowd showed up for the evening meal. "And the location of the new cabin was our favorite place to sit at sunset."

Given that the site had such a clear focus, the architects chose to frame the experience of it as unobtrusively as possible, with a simple, flat-roofed glass box, sheathed on three sides with a varied, rhythmic pattern of 1-by-3-inch horizontal cedar slats. Fabricated in a parking lot in Toronto next to a commercial building owned by the client, the structure was then

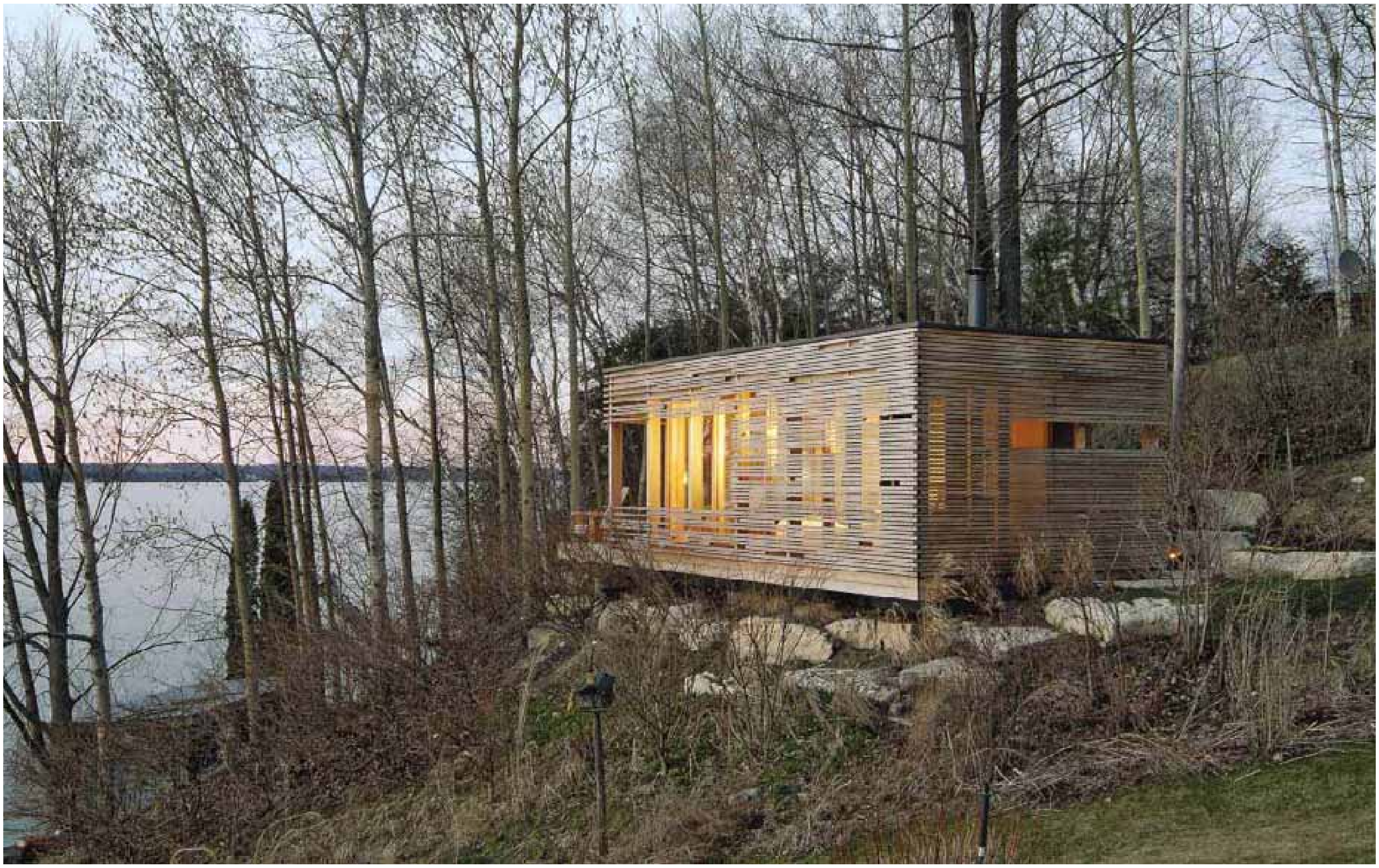
Canadian design journalist Kelly Rude contributes to a variety of magazines and journals, including Interior Design, Surface, Azure, *and* Canadian Interiors.

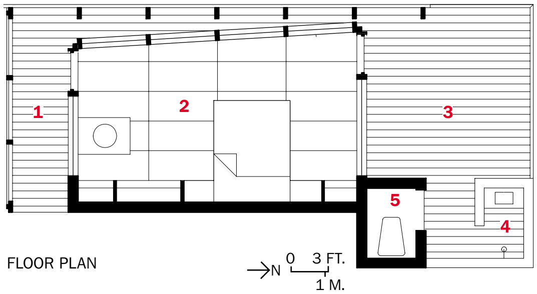
Project: *Sunset Cabin, Lake Simcoe, near Toronto, Canada*
Architect: *Taylor_Smyth architects—Michael Taylor, partner in charge; Michael LaFreniere, project team*
Consultant: *GROW (landscape)*
General contractor: *The Brothers Dressler, with Jaan Poldaas*



Overlooking Lake Simcoe, the cabin boasts excellent views. The floor of the building extends outside toward the lake to become a deck. A screen of 1-by-3-inch horizontal cedar slats covers portions of the floor-to-ceiling glass windows, contrasting openness with protection.

PHOTOGRAPHY: © BEN RAHN/A-FRAME





FLOOR PLAN

1. *Porch*
2. *Cabin*
3. *Deck*
4. *Outdoor shower*
5. *Bath*

disassembled, moved on a flat-bed truck, and reconstructed on-site, supported by two steel beams on two concrete caissons. "The level of craftsmanship and detail is second to none," says the husband, referring to the work of his builders, Jaan Poldaas and the Dressler Brothers, who are millworkers by trade.

Made with cedar windows, doors, and cladding, with birch-plywood panels for the interior floors, back wall, ceiling, and built-ins, the cabin was sited to orient the bed toward the summer sunset. You enter from the south via an enclosed porch running the width of the 15-by-18-foot, one-room shed. A nod to the mudrooms typical of the country houses of a bygone era, the porch is a thoughtful transition between arriving from the outside and stretching out on the bed to bask in the vista.

"Lie down and check out the view," offers the wife. The left side of the window displays peek-a-boo glimpses, due to the narrow horizontal slats. On the right, a large span of open glass provides the full frontal view to the lake and beyond. Regular sights include migrating geese skidding on water in the fall and coyotes striding on ice in winter. Functioning year-round, the cabin is heated by a wood-burning stove and a small back-up electric heater.

An outside shower deck positioned with just enough privacy yet

One enters from the south via an enclosed porch running the width of the cabin. This entry sequence provides a thoughtful transition between arriving and settling inside.

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totally open to the elements reflects the family's attitude toward design within the environment. Other examples of this ethos include a chemical composting toilet housed in a small outhouse that blends seamlessly with the cabin's exterior elements, and an organic flat roof planted with herbs and sedums, a hardy plant common on green roofs. Hugging the sloping hill, the roof camouflages the cabin, concealing it from the neighbors.

"The appeal of the cottage is in its one-room sense of enclosure, not unlike Laugier's primitive hut," Taylor proposes. "All wood, in the woods … open to it all," he continues. "And at the same time, it references the Modern tradition of pavilions in the landscape à la Philip Johnson and Mies van der Rohe. So it's a combination of private hut and an approach to Modern detailing."

Exposure to the elements has turned the cedar-clad cabin a soft silver gray. This sign of graceful aging is becoming increasingly rare, as original modest cottage buildings elsewhere on Lake Simcoe make way for either A-frame villa monsters or High Modernist monoliths.

"How does a building grow from its site?" Taylor asks. The new cabin succeeds in a manner of quiet utility, as a fitting tribute to a country cottage context of small, discrete buildings, where people still get away to put their feet up and let their hair down. ■

Sources

Woodburning fireplace: *Morso*

Locksets: *Upper Canada Hardware*

Hinges: *LCN*

Windows and doors: *The Brothers Dressler, with Jaan Poldaas*

Exterior cladding: *T&G Siding*

Green roof: *Roofscapes*

Rocking chair: *Scott Laughton*

Composting toilet: *Sun-Mar*

For more information on this project, go to Residential at www.archrecord.com.

Slats break up the light into random patterns on the interior (above left). The cabin is no more than a cozy bedroom with views (above right), which are tempered by the filtered light, so as not to overwhelm the occupant (below).

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Residential Products CEDIA Review

Trimmed-down electronics and iPod compatibility were the main themes at the Custom Electronics Design & Installation Association trade show in Indianapolis last September. An abundance of flat-screen TVs and slim speaker solutions responded to an increasing appetite for low-profile electronics, while audio companies scrambled to build iPod functionality into multiroom music products. Here are a few highlights. *Rebecca Day*

▼ MP3 wall docking station

With iPort's IW-4 iPod dock, now the iPod can become an additional music source to a distributed audio system. The iPort dock mounts in the wall, where it wires into a whole-house audio system and electrical power. An infrared sensor at the bottom of the port accepts commands from an iPod remote control across the room or from a radio-frequency-controlled, touch-screen remote located elsewhere in the house. Alternatively, users can control the iPod from the port, which doubles as a battery charger. iPort, San Clemente, Calif. www.iportmusic.com **CIRCLE 200**

◄▼ Thin is in

The boxy loudspeaker has gone the way of the bulky tube TV. Infinity's Cascade series of thin and shallow loudspeakers represents the new generation of loudspeakers that are engineered to complement flat-panel TVs. To achieve the thinner design, Infinity created a new, flat-panel midrange driver to replace the large cone driver used in traditional floor-standing speakers. The five models in the Cascade line are available in cherry veneer, high-gloss silver, or high-gloss black finish. Infinity Systems, Woodbury, N.Y. www.infinitysystems.com **CIRCLE 201**

▼ One touchy keypad

Colorado vNet replaces keypad buttons with a programmable touch-sensitive plastic surface that responds to various types of button taps. The configurable keypads replace the need for multiple keypad SKUs, and installers can modify the behavior of the touch pad to respond to the duration of touch. A single tap could mimic flipping a light switch or setting a lighting scene, while a longer touch could increase the intensity of lighting. A backlight reacts to ambient lighting to create an appropriate setting for the light level in a room. LEDs and audible tones provide feedback that commands have been implemented. Colorado vNet, Loveland, Colo. www.coloradovnet.com **CIRCLE 202**

Deck Lights
Pavilion
Landscape
Family Room
Ceiling Fan

▲ Home theater experience for smaller footprints

Da-Lite's Acoustical Imager provides a speaker solution for homeowners who can't accommodate floor-standing or in-wall loudspeakers but still want the home theater experience delivered by a projection TV screen. The Imager's frame incorporates left, center, and right front speakers, and a subwoofer with an additional pair of table- or floor-mounted speakers for surround sound complete the package. The screen is available in 4:3 or 16:9 aspect ratios and its Pro-Trim fabric covering is said to absorb light in the viewing area. Da-Lite Screen Company, Warsaw, Ind. www.dalite.com **CIRCLE 203**

For more information, circle item numbers on Reader Service Card or go to www.archrecord.com, under Products, then Reader Service.

Residential Products CEDIA Review

► The latest in television-mirror technology

The mirror TV is a natural for any living space where clients want to watch television without the display dominating the room. When the TV is off, Philip's MiraVision becomes a standard mirror on the wall and hides all wires running behind the display. Available in 32" and 42" sizes, MiraVision provides a big-screen, space-saving solution for small rooms. MiraVision switches from mirror to TV mode at the touch of a button, and its frame can be replaced to match the décor. Philips Consumer Electronics, Atlanta. www.philipsusa.com **CIRCLE 204**

theater
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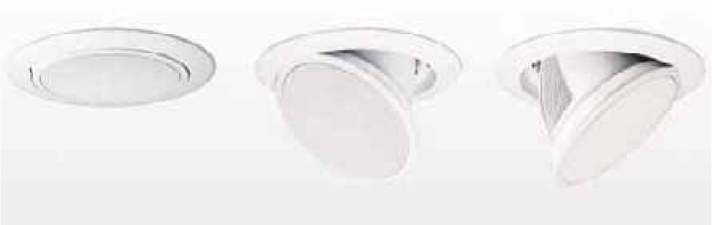
▲ Command center

Vantage Controls' TouchPoint HD is the first touch-screen controller to offer HDTV resolution for video content. The on-wall controller operates a full array of household subsystems, including lighting, security, HVAC, and appliances, as well as audio and video. The video input can display programming from cable or satellite TV as well as networked security cameras throughout the house. Vantage Systems, Orem, Utah. www.vantagecontrols.com **CIRCLE 207**

▼ Programmable in-ceiling speakers

Consumers are showing a preference for in-ceiling speakers over in-wall types, and manufacturers are looking for ways to differentiate products. SpeakerCraft's novel approach in the new Time line of speakers uses motorization to position the speakers for music or home theater and then raise them flush to the ceiling when not in use. When activated, the speakers drop from the ceiling at angles of 15, 30, and 45 degrees and then rotate toward the preprogrammed listening position. Presets enable installers to address multiple seating locations and different music and movie preferences. SpeakerCraft, Riverside, Calif. www.speakercraft.com **CIRCLE 205**



▼ Largest LCD TV yet

Sharp has pushed the envelope of the LCD TV with the largest screen size to date, a 65" model that delivers high-end 1080p resolution. With a built-in HDTV tuner and CableCard slot, the LC-65D90U can show a high-definition cable broadcast without add-on components for users who want to minimize the amount of electronics in a room. A built-in *TV Guide On Screen* provides users with an electronic program guide if they choose not to have a cable box. Both the stand and the speakers are detachable. Sharp Electronics, Mahwah, N.J. www.sharpusa.com **CIRCLE 206**

◄ Space-saving bar-style speaker

Polk's Surround Bar is designed for homeowners who want to improve on the sound quality of plasma TV speakers but don't want to sacrifice floor or ceiling space to get it. The single, bar-style speaker mounts above or beneath a plasma TV and accepts five rear-panel inputs to deliver five channels of surround sound from a single enclosure. Using signal processing and acoustical geometry, the speaker can work in any room and even outdoors in a protected location. Polk Audio, Baltimore. www.polkaudio.com **CIRCLE 208**

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Products Preservation

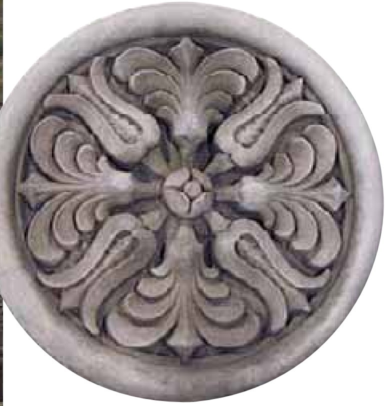
Our theme this month focuses on the latest **preservation products** on the market, including offerings for renovation, restoration, and adaptive-reuse projects. From **the rooftop to the underlayment**, these products help transform, preserve, and protect a range of building types. *Rita Catinella Orrell*

New cast stone reproduction source

Kay Berry, a manufacturer and distributor of cast stone products based in western Pennsylvania, has recently introduced the company's Custom Architectural Elements & Reproduction division. Employing Kay Berry's existing cutting-edge technology, the new division produces made-to-order decorative stone accents in a broad range of colors for residential and commercial builders and architects. Established in 1993, the company product line includes stone sculptures, benches, birdbaths, and a wide variety of garden and home accent rock designs.

Kay Berry's team of artists work with building professionals to produce original stone artwork that reflects the vision of a particular project, or to recreate existing designs, accurately matching color and texture. The architectural elements are available in a range of styles—from classic Old World to contemporary—in quantities from one to 1,000.

Two sample products from the new division include a reproduction of a meticulously detailed decorative medallion (far right) created by the latest rubber mold technology, and a Roman-style ball finial and pier cap (near right) that make a striking ornamental accent to a brick column. The division's work is not limited to outside projects: The facade on the main entrance of the Kay Berry production facility (right) demonstrates examples of split rock, sill, and headers designed and created inside the plant. Kay Berry, Saxonburg, Pa. www.kayberry.com **CIRCLE 209**



Products from Kay Berry's Custom Architectural Elements & Reproductions division include pier caps (above), medallions (above right), and facades (right).

The Revere House (left), built around 1680, stands today clad in cedar siding.

Cedar siding continues to protect a landmark

The Paul Revere House, built around 1680, is downtown Boston's oldest building and the twelfth-most-visited historic home in the nation. Restored to its original condition in 1907, the home still retains 90 percent of its original structure.

In addition to undergoing normal maintenance, a recent siding restoration using western red cedar clapboards was completed on the historic landmark over the course of a few weeks last fall. According to Nina Zannieri, executive director of the Paul Revere Memorial Association that owns and operates the home, cedar siding is used for the home for a variety of reasons. "Information provided by architect Joseph Chandler, who did the original restoration in 1907 to 1908, indicates he found clapboards on the house below one of the surviving 17th-century casement windows," says Zannieri. In addition, a possibly original clapboard was found when the building was painted in 1996. There is also documentary evidence from the late-17th and early-18th centuries indicating that cedar was available in Massachusetts and was used on buildings of a similar age and construction to the Revere House.

The house uses high-grade western red cedar siding with a molded ege, in a range of lengths from 24" to 44". Using the material originally intended for the home was a top priority for the restoration project team. "Even if lower-maintenance or longer-lasting materials are available today, our goal of historical accuracy must dictate our choice of restoration materials," says Zannieri. "In the case of the Paul Revere House, we're lucky that we're able to use a material as beautiful and durable as cedar, while still providing a historically accurate restoration." Western Red Cedar Lumber Association, Vancouver. www.wrcla.com **CIRCLE 210**

▼ Roof shingles built to last

Centennial Slate roof shingle simulates the natural color variations of true blended slate at a fraction of the cost. Centennial Slate utilizes CertainTeed's Super Shangle construction with two full-size, 18" x 36" base shingles, resulting in four layers of shingle protection and 8" exposure when applied. The shingle is available in six colors, is algae-resistant, features Class A fire rating, and meets ASTM D3462, a tough shingle performance standard required by many of today's building codes. CertainTeed, Valley Forge, Pa. www.certainteed.com **CIRCLE 211**

► Affordable replacement

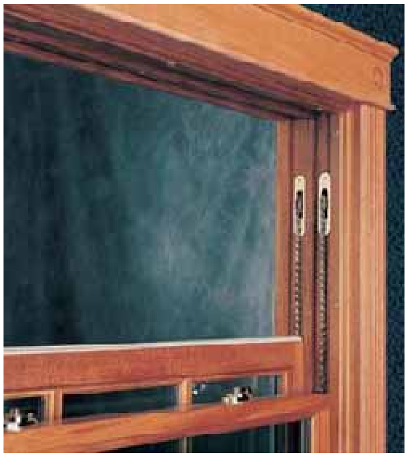
Builders Clad-Wood windows are crafted using solid pine AuraLast wood and offer homeowners a more affordable choice for wood window replacement. Backed by a 20-year warranty against wood decay, water absorption, and termite infestation, the windows come standard with high-performance, argon-filled, low-E glass with coatings that block 84 percent of UV rays and deliver 96 percent improvement in thermal performance during the winter. Jeld-Wen, Klamath Falls, Ore. www.jeld-wen.com **CIRCLE 213**

◄ Local restoration mortar

Cathedral Stone Products, the exclusive U.S. manufacturer of Jahn historic restoration mortar products, has installed new manufacturing and testing laboratories at company headquarters in Hanover, Maryland. With the new plant, orders can be shipped within 24 to 48 hours. Previously, the products were formulated and shipped from Germany. Cathedral Stone Products, Hanover, Md. www.cathedralstone.com **CIRCLE 215**

▼ Historic charm without the historic hassle

Custom made for each project, Kolbe & Kolbe's Old World Classic windows feature a brass pulley system, complete with brass chains and alloyed weights, that lower the unit to operate with ease due to the proportionate balance between the sash and weights. Ideal for historic applications, the windows are available in various wood species and are traditionally designed triple-hungs, double-hungs, and single-hung units. Kolbe Windows & Doors, Wausau, Wis. www.kolbe-kolbe.com **CIRCLE 212**



► Welcome adaptive reuse

The adaptive reuse of a carriage house and barn (top right) at Rockwood Park, Wilmington, Delaware, into the new visitors center (below right) was designed to match existing features of the Park's historic 19th-century Mansion Museum. Follansbee's TCS II roof was specified to match the original terne roof that was installed on the mansion in the late 1970s. The visitor's center roof was completed with 11,000 square feet of Follansbee's TCS II in 1" double-lock, standing-seam profile. To maintain consistency with the mansion's color scheme, the roof was painted with Follansbee's Rapidri paint in a customized yellowish gray color. Follansbee, Follansbee, W.V. www.follansbeeroofing.com **CIRCLE 214**

▼ All on the same level

USG's Tile and Flooring Division has introduced a new family of poured, self-leveling cement underlayments called Ultraflow. All four of the new products offer high compressive strengths, performance, and versatility, utilizing a uniquely engineered cement chemistry. The self-leveling underlayments come presanded in a bag, mix easily at the job site, and can be applied in a wide range of commercial, institutional, and residential flooring applications. USG, Chicago. www.usg.com **CIRCLE 216**

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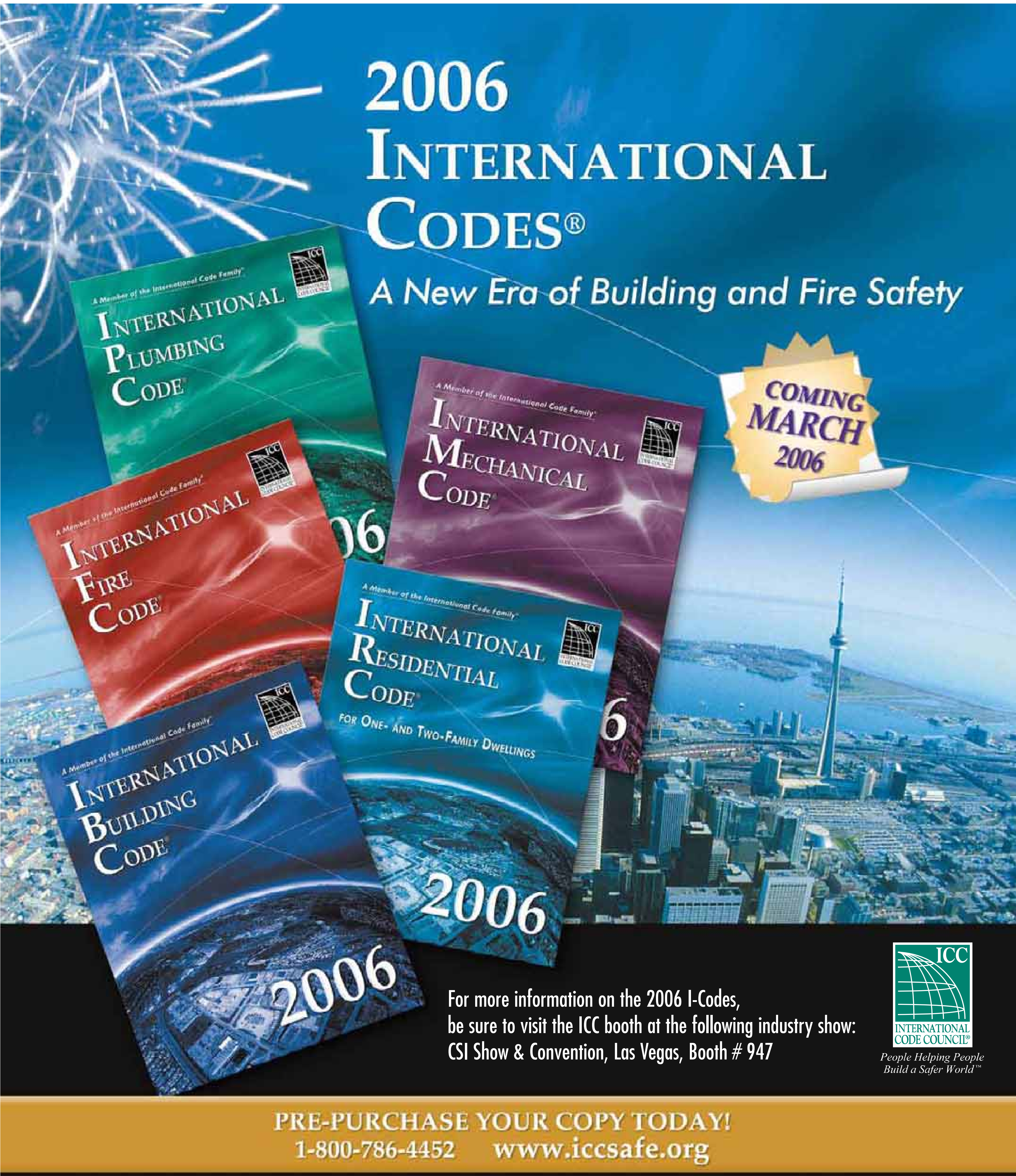
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Product Briefs

► Expressive tiles

Imagine Tile's Expressions ceramic tile designs are created by a combination of state-of-the-art digital imaging and cutting-edge ceramic production techniques. The Canyon Design (right), inspired by a piece of metal discovered in a 200-year-old barn, has a natural textured look and comes in four colors, in both 16"-square and 8"-square configurations for residential and commercial projects. The Florence design, inspired by Renaissance frescoes, simulates in great detail the distressed and crackled effects of age on a crafted wall surface. Imagine Tile, Bloomfield, N.J. www.imaginetile.com **CIRCLE 217**

▲► Modular refrigeration

Thermador's Freedom Collection features the first modular fresh-food and freezer columns that allow built-in refrigeration to fit anywhere in the kitchen. Set to debut on July 4, the collection will feature 24" and 30" fresh-food columns; 18", 24", and 30" freezer columns; 18" and 24" dispenser freezers; and a 36" bottom freezer with two or three doors. The collection will be available in stainless steel or matched to existing kitchen cabinetry for a fully integrated look. The collection will also offer a range of handy features, including a hinge that allows all the columns to be fully flush-mounted to the cabinetry; a motorized Liberty Shelf that moves a fully loaded shelf of up to 20 pounds with the touch of a button (above right); and a pull-down flip tray on the external water dispenser that accommodates pitcher-size containers. Thermador, Huntington Beach, Calif. www.thermador.com **CIRCLE 219**

Product of the Month Venicia Cabinets

KraftMaid Cabinetry, known for traditional designs, has changed pace with Venicia, a new line of European-styled residential and light-commercial cabinets. Outside of the kitchen, the cabinets can be used in baths, laundry rooms, home offices, and other spaces.

Venicia is an open-frame, semicustom cabinetry line that offers the look of imported cabinets at a lower price point. The open-frame design increases usable storage space, and the absence of horizontal rails and vertical stiles improves interior access. Venicia offers 29 door styles ranging from modern to transitional designs, 31 color and finish choices, two stainless-steel wall-hood designs, and more than 40 exclusive decorative hardware pieces. KraftMaid Cabinetry, Middlefield, Ohio. www.kraftmaid.com CIRCLE 218

▼ Operable screen system

Nana Wall Systems has introduced a European-designed operable screen system to the U.S. market. The NanaScreen system is licensed by Nana Wall Systems and has been customized to complement the large, movable NanaWall opening glass wall system. NanaScreen is a series of collapsible, pleated-screen panels that connect the full width of the NanaWall, keeping out the bugs but letting in the breezes. The screen features 4"-wide, vertical cassettes to support the reinforced-polypropylene screen mesh. When open, the NanaScreen collapses to the side and virtually vanishes into its vertical stiles with a simple glide of the panels. Nana Wall Systems, Mill Valley, Calif. www.nanawall.com **CIRCLE 220**

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Entries must be postmarked no later than May 15, 2006.

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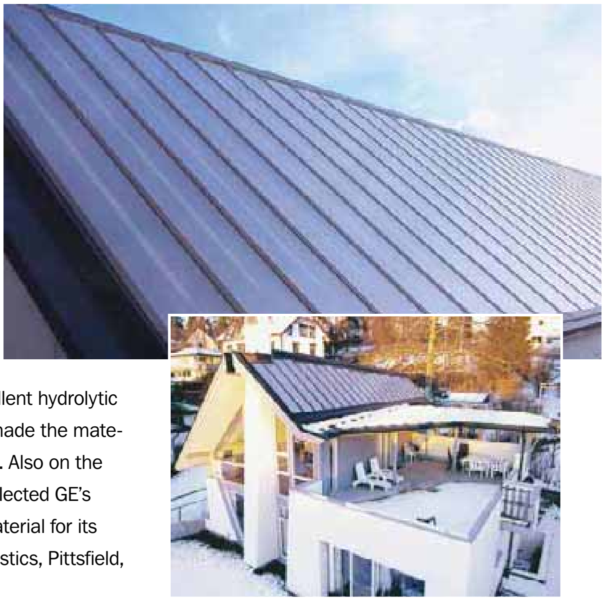
Product Briefs

◄ Shaping a spa environment

Lasco Bathware's new luxury brand, Contours, includes the new Radius Series bath and shower modules. Lasco partnered with Blue Design, a Los Angeles design firm, to develop the five contemporary baths and three luxury showers. Inspired by design elements of the BMW Z4 sports car, the baths feature soft concave surfaces, pearlescent finishes, and surface tension details. The baths include an air-and-water hydrotherapy system, an inline heater, and one-touch functionality. The Euro-styled showers, in 48" and 60" widths, have optional steam and body shower sprays, chromatherapy lighting, and a teak floor insert. Lasco Bathware, Anaheim, Calif. www.lascobathware.com **CIRCLE 221**

► If it can stand the heat ...

Norway's Solarnor AS has developed the first high-temperature polymer collector using GE Plastics' Noryl EN150SP resin. The company wanted to find a replacement for the expensive and cumbersome choices of copper and aluminum for the reservoir in their solar panels. The Solarnor AS solar-panel system (right) collects the sun's energy to heat water that can, in turn, heat rooms and provide hot water. Noryl resin's ability to withstand high water temperatures, plus its excellent hydrolytic stability under constant exposure to water, made the material a good candidate for the Solarnor design. Also on the solar-energy front, CSI Solar Technologies selected GE's Lexan EXL 9330 resin as a durable cover material for its solar-module-battery connection box. GE Plastics, Pittsfield, Mass. www.geplastics.com **CIRCLE 222**



◄ Superb solar control combination

One of RECORD'S 2005 Product Reports Editors Picks, Solarban 70XL glass is a new solar-control low-E glass from PPG that offers an unprecedented combination of solar control and visible light transmittance (VLT) with a transparent, color-neutral appearance. In a standard 1" insulating glass unit, Solarban 70XL has a Solar Heat Gain Coefficient of .27 with a VLT of 63 percent. That equates to a Light to Solar Gain ratio of 2.3, which surpasses the performance of any other solar-control low-E glass on the market. Independent testing has shown that specification of Solarban 70XL glass could defray initial capital costs for cooling equipment by as much as 26 percent. PPG Industries, Pittsburgh. www.ppg.com **CIRCLE 223**

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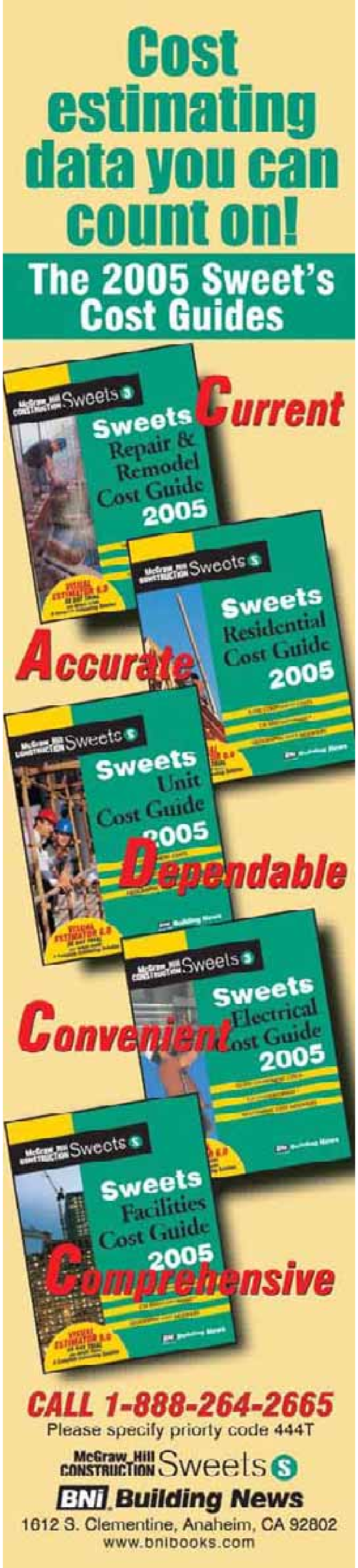
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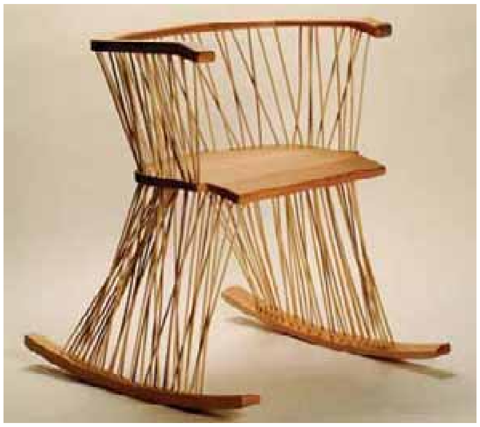
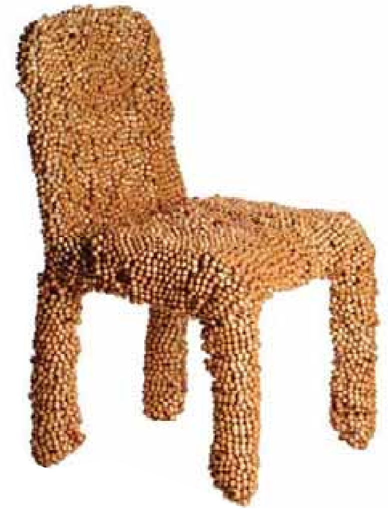
Product Briefs Promosedia Review

Promosedia is an annual trade fair dedicated entirely to residential and contract seating made in the Friuli region of Italy. The following are a few of the winners in the Invited and Top Ten Competitions. *Charles Linn, FAIA*



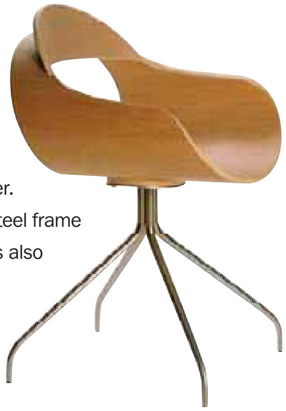


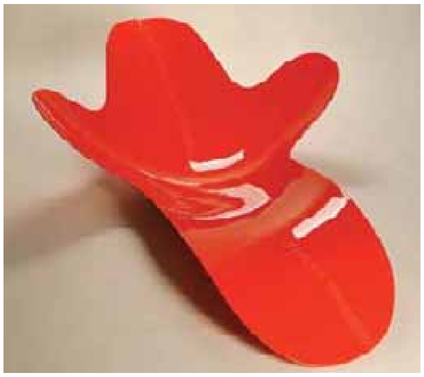
▲ Invited competition winners

The Rodrock (left) and Soft (right) chairs were two of Promosedia's six International Design Competition winners. Rodrock was designed by Munich-based Weisshaar/Kram. Its solid beech skids, bottom, and back are fastened together using dozens of ⅕"-wide wooden dowels. For accuracy's sake, holes for the dowels are drilled with the aid of a computer-controlled drilling machine. Soft, designed by the Swedish firm Front, is a comfortable, form-fitting chair made of a wooden form wrapped with hundreds of small balls of wood that have been threaded over elastic cables. Promosedia, Udine, Italy. www.promosedia.it **CIRCLE 224**

► Fits like its namesake

Promosedia's Top Ten Chairs are selected by a jury made up of designers, journalists, and manufacturers. One of their selections included this sensuously contoured armchair called Glove. Its one-piece, ergonomically fitted seat and back are covered with oak veneer. Glove was designed by Daniel Rode for Vemap. It is supported by a steel frame that is finished in a satin chrome. A padded seat covered in leather is also available. Promosedia, Udine, Italy. www.promosedia.it **CIRCLE 225**





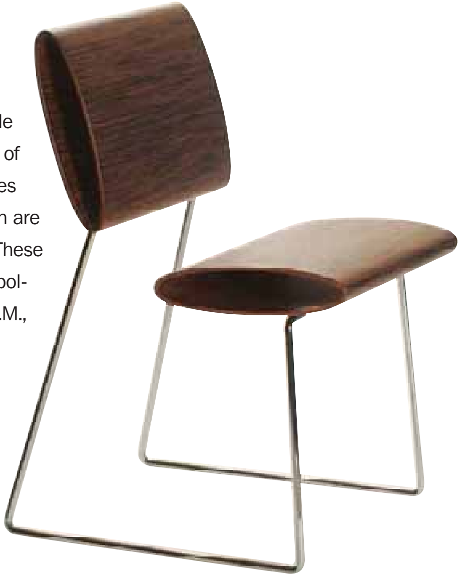
◄ Colorful recliner

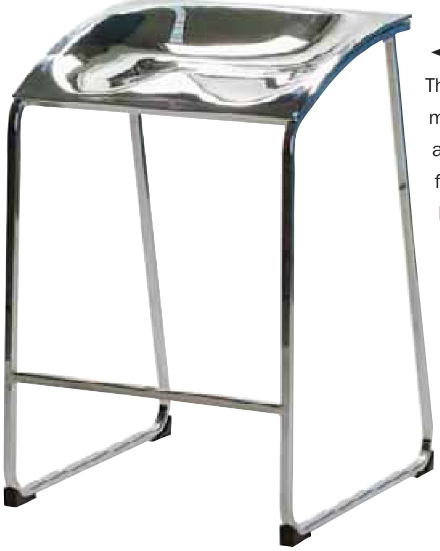
The Lazy Mary is a simple, one-piece chaise longue made of injection-molded composite resins that are reinforced with fiberglass. It is ideal for poolside use at spas, resorts, and at home. The weather-resistant recliner comes in a number of colors and can be stacked for storage. Monica Graffeo designed the chair for Disguincio. Disguincio, Pordenone, Italy. www.disguincio.com **CIRCLE 226**

For more information, circle item numbers on Reader Service Card or go to www.archrecord.com, under Products, then Reader Service.

► Springy but firm seating

Designers and members of the press at the show made Boogie their choice for Promosedia's Residential Chair of the Year. Daniel Rode's dining-room chair for P.S.M. uses flat laminated-wood tubes for the seat and back, which are covered with either light- or dark-stained oak veneer. These components are attached to a steel frame finished in polished chrome, which has a slight give when in use. P.S.M., Udine, Italy. www.psmsedia.com **CIRCLE 227**



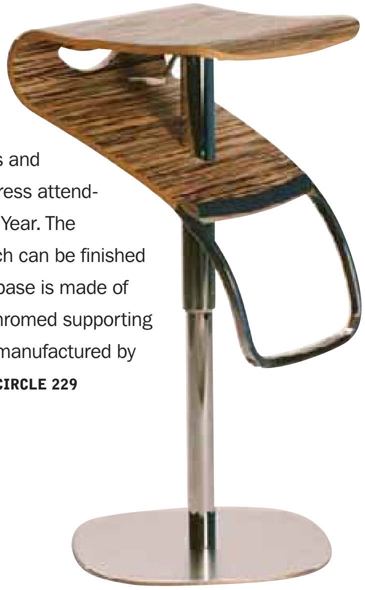


◄ Smooth, contoured comfort

The Arod stool is fitted with an anatomically inspired, molded-plastic seat, which is available in a variety of solid and transparent colors, as well as chrome. A chrome-finished, tubular-steel superstructure is pictured (left); however, a second version, supported by a stainless-steel base and an adjustable-height column is also available. Claudio Dondoli and Marco Pocci of Studio Archirivolto designed Arod for Pedrali. Pedrali, Brescia, Italy. www.pedrali.it **CIRCLE 228**

► A seat for swingers

Designer Giovanni Cigana's Dafne, a stool for use in bars and restaurants, was selected by design professionals and press attending Promosedia as their choice for Contract Chair of the Year. The laminated-wood seat is covered with beech veneer, which can be finished in bleached-oak, ebony, and zebra-striped finishes. The base is made of textile-patterned stainless steel, and the height of the chromed supporting column can be adjusted using a gas pump. The stool is manufactured by Rover Plus. Rover Plus, Udine, Italy. www.roverplus.com **CIRCLE 229**



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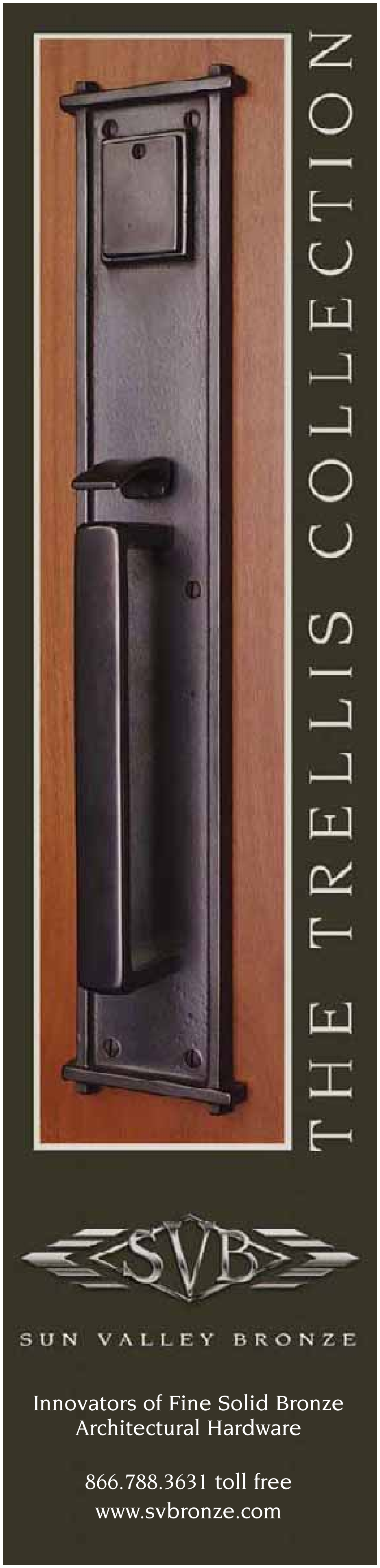

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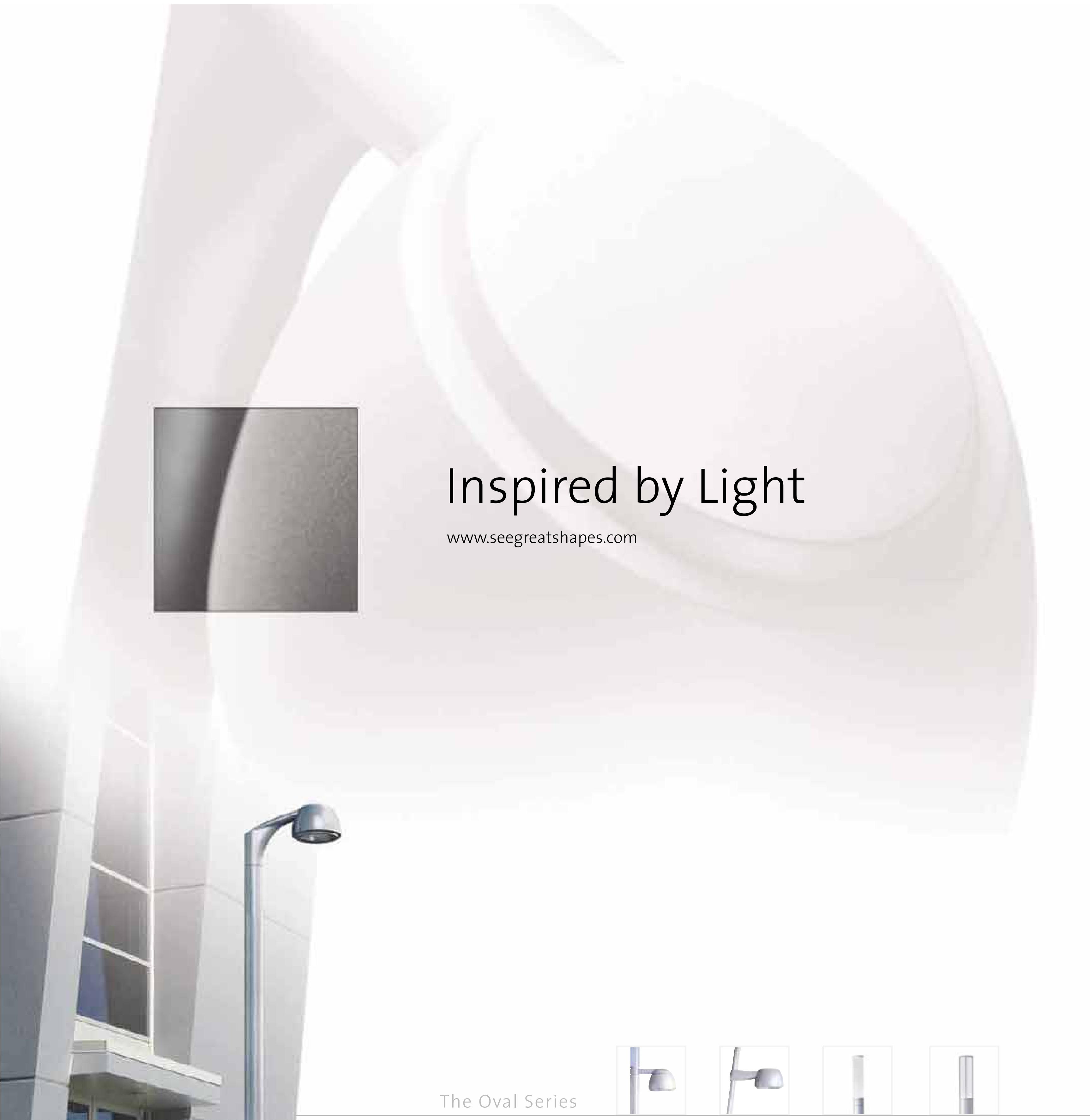
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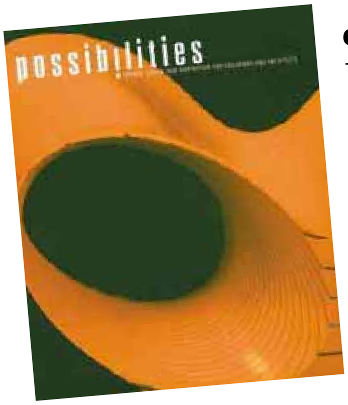

Corian showcase magazine

To celebrate the finest works created with Corian—from Ron Arad's Lo-Res-Tabula-Rasa table to KOL/MAC's Resi-Rise skyscraper of the future—DuPont has published the first edition of *Possibilities*, a free, 52-page magazine that includes 115 images and descriptions of inspiring ways that Corian has been used as a design material. DuPont, Wilmington, Del. www.coriandesign.dupont.com **CIRCLE 230**

Lighting specifier reference

Beta Lighting has developed its *Specifier Reference*, a 432-page, full-color guide to Beta's complete line of luminaires, including architectural, security, high and low bay, canopy and parking, directional accent, sign, and indirect fixtures. Each luminaire is included, complete with product and application photo, and photometric, dimension, and lamp info. Beta Lighting, Sturtevant, Wis. www.beta-kramer.com **CIRCLE 231**

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SPECIFIER REFERENCE

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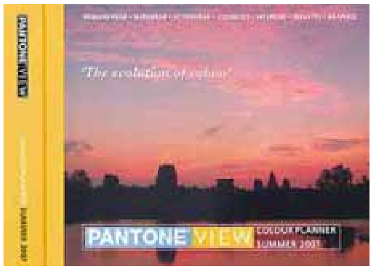
Pantone's Summer 2007 edition of the *Pantone View Colour Planner*, its cross-discipline color forecasting tool, is titled *The Evolution of Colour*. The planner offers nine palettes for Summer 2007 for use in fashion, industry, cosmetics, interiors, and graphics. The planner sells for $750 from Pantone distributors nationwide. Pantone, Carlstadt, N.J. www.pantone.com **CIRCLE 232**



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Focal Point's *2006 Specifications Guide* is completely redesigned and expanded to a 400-page hardcover book. Highlights include a set of indexes to help find luminaires by either application type or family name, over 100 application photographs, and a sturdy slipcase to store the book and new brochures sent throughout the year. Focal Point, Chicago. www.focalpointlights.com **CIRCLE 233**

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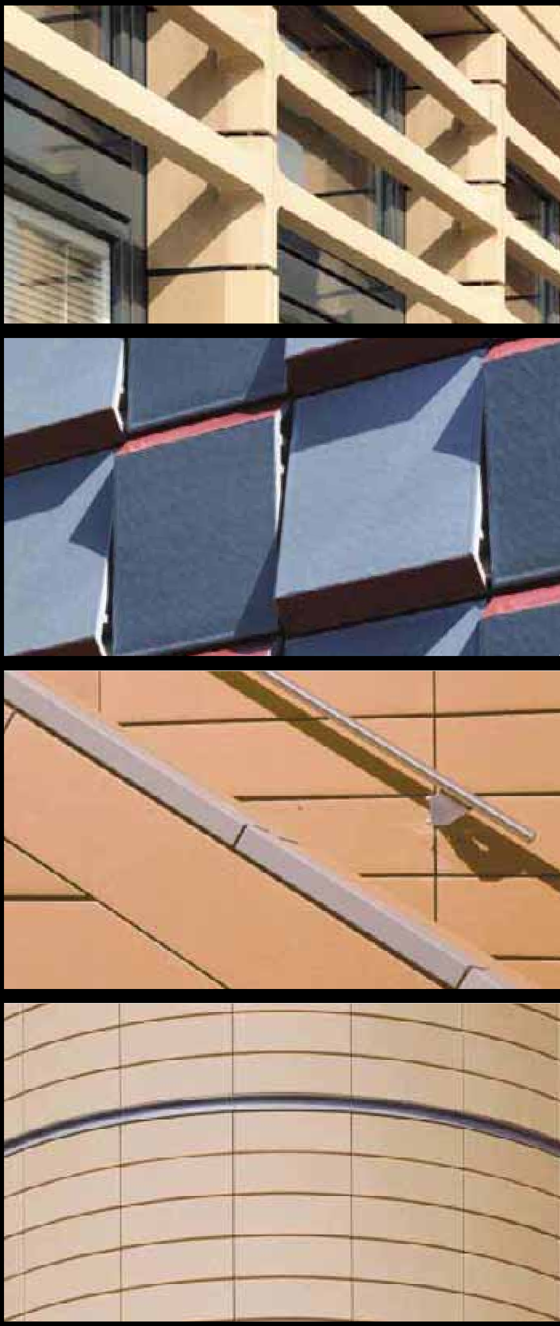
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http://glasscor.cristul2.com

metal geometric
g

Glasscor is a Portuguese brand of handmade accessory and lighting designs in colored glass and ceramic. Available in both Portuguese and English, the new Web site includes an easy-to-access product catalog that includes some technical data, drawings of the pieces, and color options. A link page guides readers to sites offering more information about Glasscor's local region in Portugal as well other design sites of interest.

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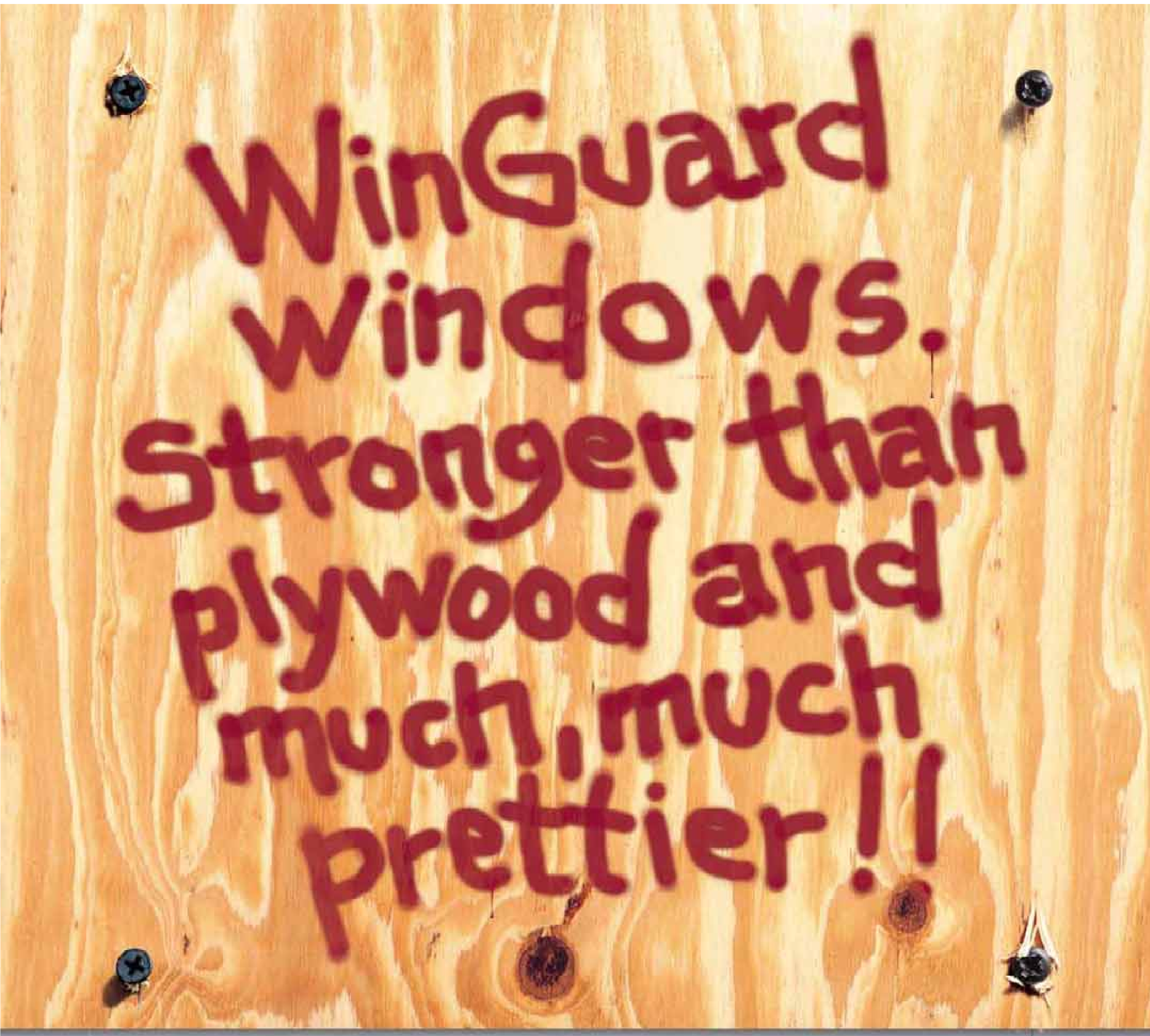
Technical Glass Products has launched a new Web site designed to provide the trade with information, specifications, and ideas for the application of the company's new architectural products, including structural glass, surfacing materials, decorative glass, framing, and more.



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Barbara A. Nadel FAIA, Consulting Editor
Continuing Education Section

202-206 Thermal and Moisture Control in Exterior Metal Walls

By Peter J. Arsenault, AIA, NCARB, LEED-AP
Provided by Centria

LEARNING OBJECTIVES:
- Describe thermal and moisture control performance for exterior metal walls
- Define the components of an exterior wall system assembly
- Analyze how different climates affect design of exterior wall systems
- Review the advantages of using rainscreens in building design
- Evaluate design criteria for superior performance exterior wall systems

207-211 Air Barriers: Increasing Building Performance, Decreasing Energy Costs

By Charlotte Forbe
Provided by Dupont Tyvek

LEARNING OBJECTIVES:
- Explain recent trends in air barriers for buildings
- Understand the physics of air and moisture movement through the building enclosure
- Discuss air barrier functions, benefits and performance requirements
- Select the appropriate air barrier for building projects

213-217 Concrete Waterproofing with Crystalline Technology

By Stanley Stark, FAIA
Provided by Xypex

LEARNING OBJECTIVES:
- Understand how crystalline technology works with concrete to provide high performance waterproofing qualities
- Explain the difference between porosity, permeability and the mechanics by which water is absorbed through concrete structures
- Discuss how crystalline waterproofing technology improves the durability of concrete structures and reduces maintenance
- Identify appropriate crystalline technology product applications for various types of concrete construction
- Analyze how crystalline technology admixtures can impact building life cycle and project construction costs

218-222 The Pros and Cons of Restoring and Replacing Wood Windows

By Karin Tetlow
Provided by Artistic Doors & Windows, Inc.

LEARNING OBJECTIVES:
- Analyze the choices between restoring and replacing old wood windows
- Describe the components and functions of old and replacement wood windows
- Examine design issues, options, alternatives, and recommendations for renovation of old wood windows

Thermal and Moisture Control in Exterior Metal Walls

Achieving durable, economical, and sustainable metal wall systems

Provided by Centria

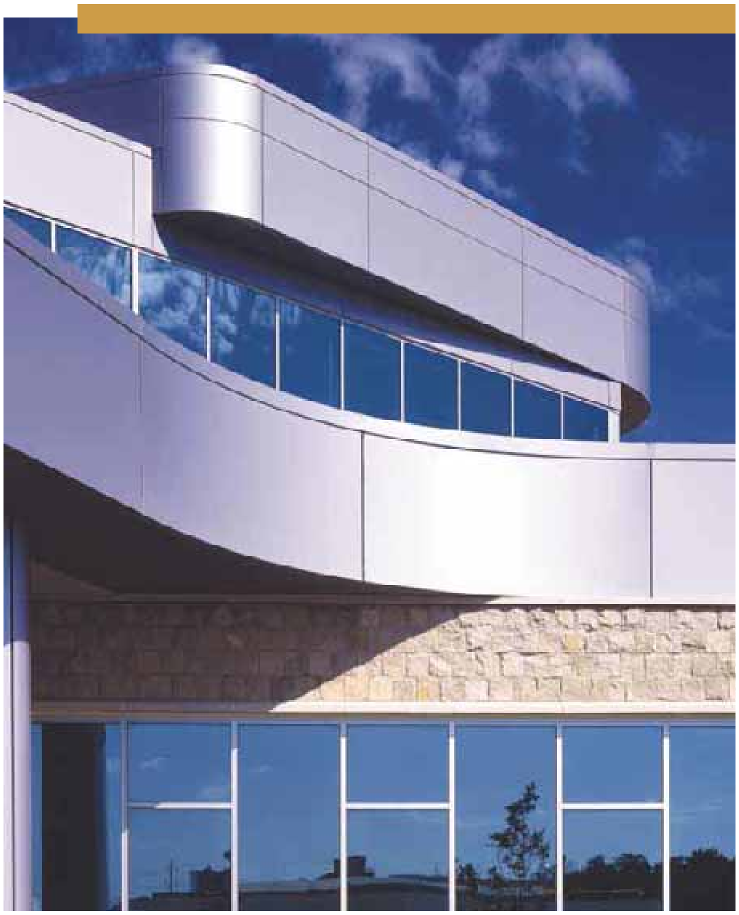
By Peter J. Arsenault, AIA, NCARB, LEED-AP

Water in liquid and vapor states, and temperature changes have long been recognized as the most destructive weathering elements affecting the entire building envelope, especially exterior walls. Accordingly, moisture management and thermal efficiency are critical keys to a successful exterior wall system. This success is best achieved when buildings are designed to respond to environmental and climatic conditions. However, since the predominant design of exterior walls currently employs multiple material components that are used in different climates, care must be taken to understand the interaction and proper selection of those different components.

> ***The combination of these energy efficiency changes and this comparatively higher moisture level has caused a new concern regarding moisture retention in exterior wall systems that can create design challenges for architects.***

1. Moisture Problems and Causes

The rapid rise of energy costs in the early 1970s led to a new standard of design for building envelopes that was more energy efficient and airtight than before. This is reflected in the growing number of energy code changes that require higher R-values and lower air infiltration rates for exterior walls, and other parts of the building envelope. Meanwhile, occupied spaces of buildings achieve relative humidity (RH) levels that are frequently around 40 percent. The combination of these energy efficiency changes and this comparatively higher moisture level has caused a new concern regarding moisture retention in exterior wall systems that can create design challenges for architects. The problems caused by the presence of moisture in a wall system cavity include:



- Corrosion of metal structural elements in the wall cavity.
- Reduction of thermal values of some insulation.
- Deterioration of internal components, such as tapes and wraps.
- The potential for the growth of mold within the wall system.

While the first three of these concerns are common and long standing, mold has emerged as a major concern, particularly in multi-component walls. The three elements required for mold to grow are water (in vapor or liquid form), moderate temperature, and an organic food source that applies to many wood-based or paper-covered building materials. Moderate temperature inside a wall cavity is common, which means that controlling mold requires eliminating either the food source or moisture, or both.

2. Performance Requirements for Outer Wall Materials

The weathering element of a multi-component wall system is the outer wall material. In addition to being the aesthetic wrap for the building, it is very important in determining the rest of the wall system design. Moisture management begins with the selection of this outer material.

Porous Materials

Materials like masonry, precast concrete, Exterior Insulation Finish Systems (EIFS), and Glass Fiber Reinforced Concrete (GFRC) are porous materials that will absorb and retain moisture. Wind-driven rain in particular can be an issue for these porous building materials that challenge designers to address the conditions that arise after a storm. When the sun heats up the outer wall, the absorbed moisture is changed to water vapor. The vapors move from the warm, high-RH area to the colder, often air-conditioned interior. A problem can occur in cold or moderate climates where the vapors can pass through the wall system components, enter the wall cavity, and condense.

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Use the learning objectives below to focus your study as you read **Thermal and Moisture Control in Exterior Metal Walls.** To earn one AIA/CES Learning Unit, including one hour of health, safety, welfare credit, answer the questions on page 206, then follow the reporting instructions on page 224 or go to the Continuing Education section on *archrecord.construction.com* and follow the reporting instructions.

LEARNING OBJECTIVES

After reading this article, you should be able to:

- *Describe thermal and moisture control performance for exterior metal walls.*
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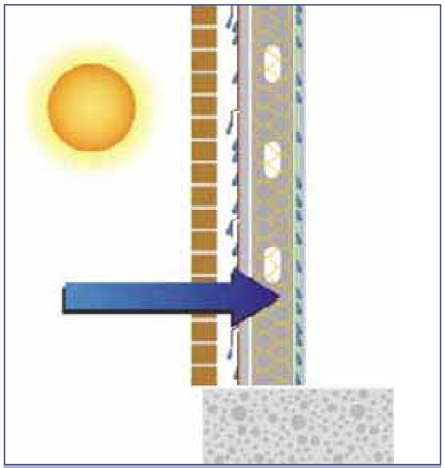
- *Evaluate design criteria for superior performance exterior wall systems.*



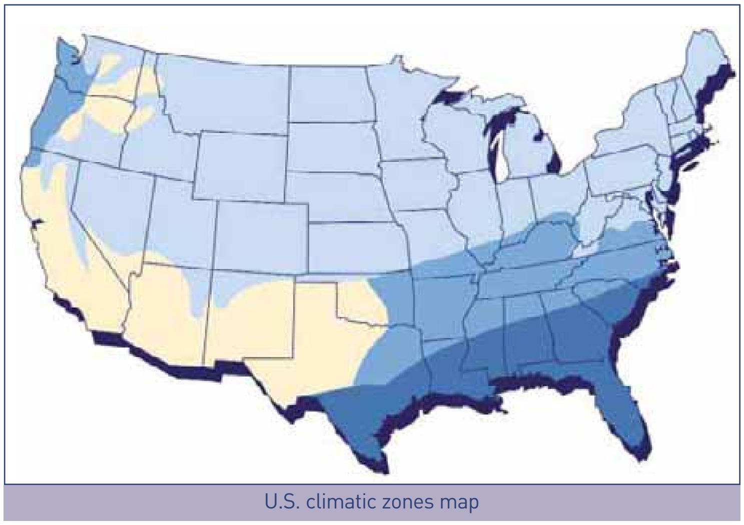
Wet porous materials are prone to moisture in wall cavities when heated by the sun

Non-Porous Materials

Other materials, like metal, glass, and polymer-based walls are non-porous and do not retain moisture. They eliminate a large portion of the moisture or water vapor problem through their characteristic of not absorbing water. Metal cladding systems are such materials and they can further be designed to act as rainscreens, to minimize water entry and to ventilate wall cavities where moisture can collect.

3. Climatic Zone Considerations

Each of the four U.S. climatic zones raise varying degrees of moisture concerns. In the southeast, during the summer months, the hot and humid ambient conditions can lead to entrapment problems in the wall system. For the northern states, moisture control is more moderate during the summer, while controlling moisture from interior conditions during the winter is critical. Arid areas are considered low risk and do not have moisture problems.

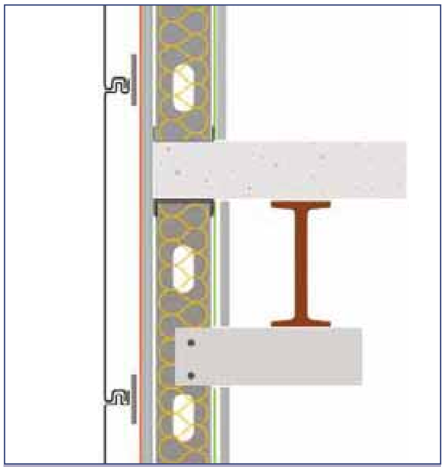


U.S. climatic zones map

Moisture Control Designs for Cold to Very Cold Climates

Key elements for controlling moisture in a typical multi-component wall assembly for cold climates (Figure 4) are:

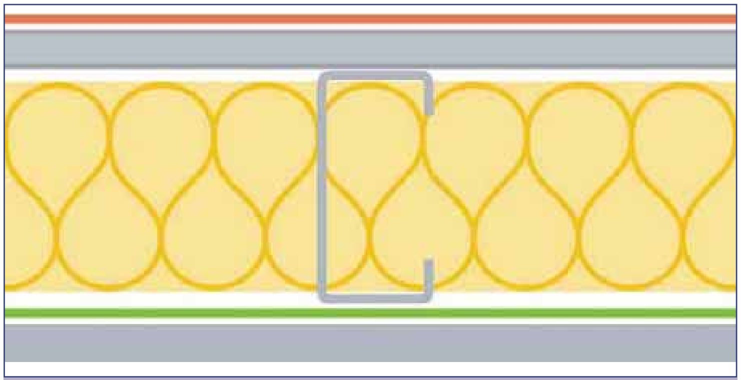
- The vapor barrier–retarder: Airflow and vapor move from warm high pressure to cold lower pressures. In northern regions, winter is the critical time, when outside temperatures will average 8 degrees Fahrenheit, with a 20 percent RH and the interior ambient is 70 degrees Fahrenheit, with a 40 percent RH. Given these conditions, the dew point of the wall is 45 degrees Fahrenheit. If the vapor barrier-retarder were ineffective, vapors that enter the wall cavity would condense at a rate of as high as three pints of water per 100 square feet of wall area per week.



Section detail of a typical multi-component wall assembly for cold climate construction.

- Air and water barriers: An ineffective air barrier causing air leakage is considerably worse, because 80 pints of water could condense in the same one-week time frame. The comparison depicts how critical the air barrier is for moisture control.

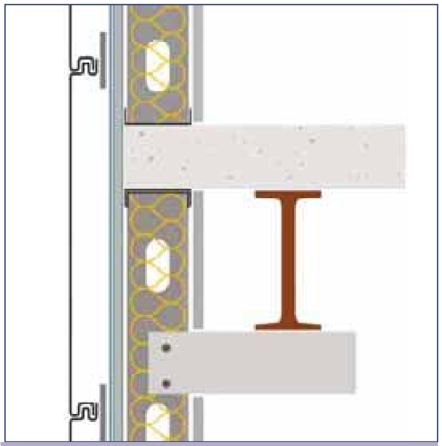
Using the previous temperatures, consider the temperatures of the metal studs (Figure 5). These range from 17.5 degrees Fahrenheit on the exterior side to 37 degrees Fahrenheit on the interior. This is significant, indicating a problem with either the air or vapor barriers entering the cavity. Any surface that is below the dew point of 45 degrees Fahrenheit and in contact with the moisture laden air will cause condensation. Condensation in the cavity will cause corrosion of the stud and reduction in the thermal value of fiberglass insulation (Figure 5).



Plan detail of insulated metal stud wall and dew point issues that cause moisture condensation.

Moisture Control Designs for Hot and Humid Climates

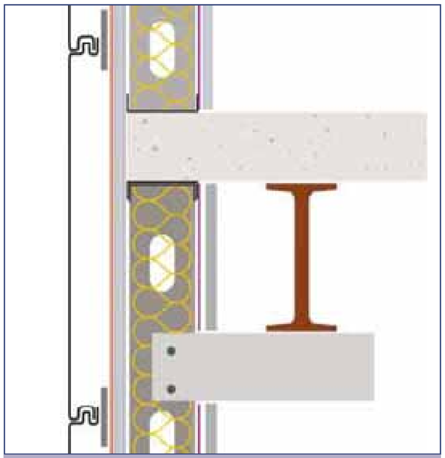
In hot, humid southern climates, where moisture is a concern during the summer, the vapor barrier is installed at the exterior of the wall system (Figure 6). This layer is frequently a multipurpose material providing an air, water, and vapor barrier. Any breaks in this barrier will allow air and vapors to enter the cavity. The temperature of the metal studs can be below the dew point when adjacent to interior gypsum, and condensation will form, causing corrosion, along with insulation and gypsum board deterioration problems.



Section detail of typical warm climate multi-component wall system.

Moisture Control Designs for Moderate Zones

In moderate climate zones throughout the U.S., a "smart" vapor barrier is often installed in the wall system (Figure 7). It is typically located on the interior of the studs and has characteristics that allow variable amounts of air and water permeability. When installed correctly, the perm rating actually changes with the change of relative humidity. During the winter when RH is low, the perm rating is 1, and during the summer with high RH the perm rating changes to 10 (Figure 7, Centria #9).



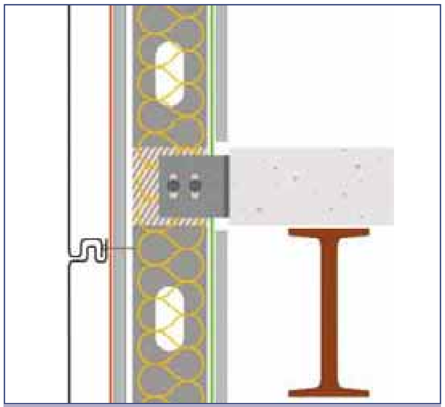
Section detail of typical moderate climate multi component wall system.

4. Multi Component Wall Systems

Multi-component wall systems are made up of numerous individual components that require careful design attention in order to avoid some common challenges related to thermal, moisture, and structural concerns. Typical components and concerns include:

Metal Studs

A major structural concern with the use of metal studs on a concrete floor slab is the deflection in the floor that can be transferred to the exterior wall system. This design can cause the deflection stresses to pass through the studs to the single most expensive element of the wall, the outer wall material. The solution is to move the studs outboard of the floor slab and use slotted connectors to handle the deflection (Figure 8). Not only is this is a better design, it is also a less expensive solution.



Separating the metal studs from floor slab deflection.

Insulation

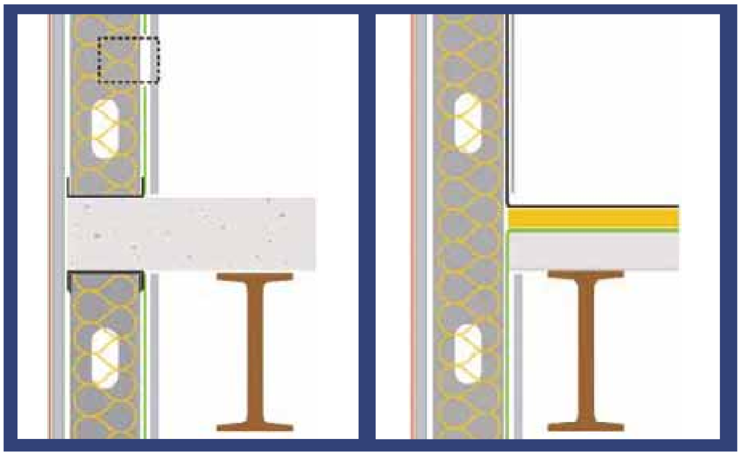
The second component is the thermal barrier, or insulation. Frequently fiberglass insulation is used in the cavity between the metal studs. While fiberglass has been tested to provide reliable thermal protection at a reasonable cost, there are concerns with its effectiveness when it is used in combination with metal studs, however. This has been documented in ASHRAE 90.1, which is the basis for many energy codes used in the U.S. (As of 2005, only 10 states do not reference this standard, while the other 40 states represent over 70 percent of the commercial construction in the U.S.) ASHRAE 90.1 requires reductions in the calculated value of the insulation by using "correction factors" (Figure 9). Note that a six-inch stud, filled with fiberglass insulation, at 16-inch centers has a theoretical R-value of R-21 but is severely reduced to only a value of R-7.4. The reason for the reduction is based on the thermal conductivity of the metal studs and the net effect on the overall heat transfer of the wall system.

Nominal Framing Depth	Nominal Insulation R-Value	X	Correction Factor	=	Effective R-Value
4" @ 16" O.C.	R-15	X	0.43	=	R-6.4
4" @ 24" O.C.	R-15	X	0.52	=	R-7.8
6" @ 16" O.C.	R-21	X	0.35	=	R-7.4
6" @ 24" O.C.	R-21	X	0.43	=	R-9.0

ASHRAE 90.1 correction factors for metal stud walls.

Vapor Barrier–Retarders

This component of the wall system is climate dependent with stud cavity insulation. In cold climates, it is located on the interior of the metal studs. A key to good performance of a vapor barrier-retarder is continuity of the material, so as to avoid gaps or breaches. Challenges in maintaining this continuity occur at floor slabs, behind spandrel beams, at electrical box penetrations, and at the roof and wall intersection at parapets. The condition at the parapet is critical because it relies on coordinating wall and roofing contractors to maintain vapor barrier continuity. Electrical distribution is a challenge because frequently it is done in the stud cavity. Hence, at every electrical box, the vapor barrier is penetrated, causing a breach in the vapor barrier continuity.



Typical problems with vapor barrier-retarder continuity.

Exterior Gypsum Sheathing

Exterior grade gypsum sheathing is applied to the exterior side of the metal studs. There are advantages and challenges with this type of installation. Advantages include quick enclosure of the building, fire resistance, and the creation of a continuous surface to apply building wraps. Challenges associated with the gypsum sheathing material include the necessary penetrations to secure the outer material or cladding attachments, and the resulting exposure of the gypsum core to moisture.

Vapor-Permeable Air and Water Barrier In Cold Climates

Applied over the sheathing is a vapor-permeable air and water barrier or retarder, usually made of woven manufactured product. As a moisture retarder, it allows vapors to penetrate the interior stud space cavity to pass through into the outer drainage cavity. At the same time, it acts as a barrier to both air and liquid water coming from the outside. Hence, it must be fastened properly to withstand the imposed air or water that it may be subjected to but also provide continuity to maintain its integrity and effectiveness. Critical to good performance, all joints must be properly taped and secured with particular attention to detail at the window and door heads, sills, and jambs.

Drainage Cavity

The outer material is often referred to as a rainscreen, particularly if it is a metal material that is not intended to be airtight and is primarily intended to be the weathering surface that screens the rest of the wall system from rain and other elements. It may be attached in various ways that penetrate through the air and water barrier and gypsum sheathing into the studs. The space created between the rainscreen and the barrier-covered sheathing is called the drainage cavity. It must have enough space for moisture to properly drain out and still accomplish air pressure equalization, which is important in windy conditions. The drainage cavity is sometimes divided into compartments that help maintain pressure equalization.

5. Rainscreens

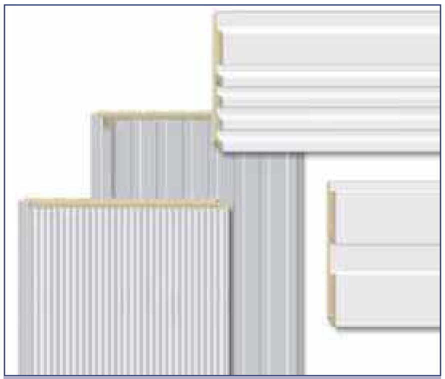
The term rainscreens refers to the outer material in a wall system, usually when it is made out of metal cladding. There are several different metal cladding types:

Single Skin or Roll-Formed units.

This common type of metal cladding has very desirable design characteristics. These materials provide variations in texture from light striations to bold ribs, which can provide light or bold textures. They can also be installed to run horizontally or vertically.

Foam Insulated units.

Metal cladding may also be an insulated composite. Design characteristics of this metal cladding type include high-performance pressure equalized joinery, and the ability of the units to be curved to various radii. They also can be installed in horizontal or vertical applications, using both wide horizontal reveals and wide vertical reveals recessed to the same plane as a standard detail. They integrate easily with glass curtainwall and windows.



Examples of foam insulated metal cladding units.

Thin Composite Metal Units

Thin metal composite walls consist of two layers of metal, with a composite core that is either formed or fabricated into a panel system. Some joinery systems have geometry that is a pressure-equalized rainscreen. These composite walls are created for superior flatness, wide modules, and grid look. Design characteristics include crisp sight lines, smooth curves, and a high-tech grid look.

Plate Systems

Plate systems are available in many types of designs. They generally are used on medium or high-rise construction.

Custom Wall Systems

Custom wall systems are almost limitless in what can be accomplished.

When comparing the different types of rainscreens, it is important to remember that they serve several important functions. Beyond providing an outward appearance and wearing surface, they allow a wall system to drain liquid and to vent water vapor from external leakage, internal vapor diffusion or internal air leakage. In general, rainscreens allow ventilation behind the metal to help eliminate moisture in the drainage cavity. In a 1988 publication entitled, "Rainscreen Cladding, a Guide to Design Principles and Practice," by Anderson and Gill, two types of rainscreens are defined, backside ventilated, and pressure equalized.

When comparing the different types of rainscreens, it is important to remember that they serve several important functions.

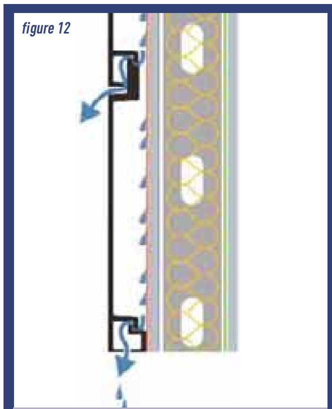
Backside-Ventilated Rainscreens

According to the authors, "back-ventilated...claddings are allowed to leak, and no deliberate attempt is made to minimize the effects of wind by means of pressure equalization...large quantities of rainwater penetrate the joints and run down the reverse, hidden face of the cladding assembly." (Figure 12).

Pressure Equalized

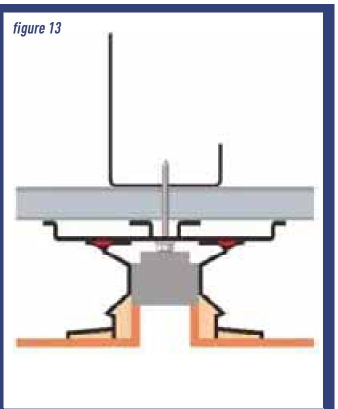
The second type of rainscreen is a pressure-equalized system. Joseph Lstiburek, Ph.D, P.Eng., principal of the Building Science Corporation, has studied wall systems in considerable depth. He describes the most effective wall system as one that prevents water from entering the wall cavity and wetting the inner layers, while

figure 12



Section view of back ventilated cladding that allows water to leak out of drainage cavity.

figure 13



Plan view of rear sealed vertical joints.

allowing air to enter and ventilate the cavity. Proper design of the horizontal joint and the air barrier in a pressure equalized rainscreen provides what Lstiburek indicates is excellent performance, that being horizontal joints that keep water out, while permitting air to enter and help dry the cavity. The vertical joints in this system are continuously rear sealed, creating closed vertical compartments in the metal cladding that help maintain pressure equalization (Figure 13). This is critical for high-wind areas and at the corners of buildings.

CLICK FOR ADDITIONAL REQUIRED READING

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- *Describe thermal and moisture control performance for exterior metal walls.*
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- *Evaluate design criteria for superior performance exterior wall systems.*

INSTRUCTIONS

Refer to the learning objectives above. Complete the questions below. Go to the self report form on page 224. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self report form on *Record's* web site—*archrecord.construction.com*—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

QUESTIONS

1. Which items listed are issues associated with the design of the building envelope?
   a. Energy costs in the early 1970s led to the design of building envelopes that were more energy efficient and airtight.
   b. Relative humidity levels in occupied buildings are frequently around 40 percent.
   c. Energy code changes require higher R-values for exterior walls.
   d. All of the above

2. Key elements for controlling moisture in a cold or very cold climate multi-component wall are:
   a. The vapor barrier–retarder.
   b. Air and water barriers.
   c. Type and location of the insulation.
   d. All of the above.

3. The major design concerns to consider when using studs and mounting them on the floor are:
   a. The deflection in the floor is transferred to the outer wall element.
   b. The design causes the single most expensive element of the wall to handle this deflection.
   c. A six-inch stud, filled with fiberglass insulation, at 16-inch centers has a theoretical R-value of R-21 but actually delivers only an R-value of R- 7.4.
   d. A and B only.

4. Mold is a major concern in multi-component walls. The three elements required for mold to grow are:
   a. Water, moderate temperature, food source
   b. Water, very cold temperature, food source
   c. Water, arid temperature, food source
   d. None of the above.

5. The advantages of rainscreens in the wall system are:
   a. Rainscreens allow a wall system to drain liquid and to vent vapor.
   b. Rainscreens do not maintain pressure equalization.
   c. Rainscreens allow backside ventilation to help eliminate moisture.
   d. A and C.

6. Surface sealed (wet sealed) metal systems are popular but are questionable as rainscreens because;
   a. They have minimal venting.
   b. Can also act as a second vapor barrier.
   c. Rely on perfect installation.
   d. All of the above.

7. A superior performance wall system:
   a. Functions in all climatic conditions.
   b. Does not have an ASHRAE rated insulation R value.
   c. Does not have a contained air space working as a pressure equalization chamber.
   d. Relies on a multi-component system with numerous separate air, water, and vapor barriers over insulated metal studs.

8. Sustainable building design includes materials that exhibit which of the following?
   a. Recyclability
   b. Thermal efficiency
   c. Durability
   d. All of the above.

9. Building material factors to consider during the design phase are the rainscreen, window selection, and insulation.
   a. True
   b. False

10. For the wall system to be sustainable, durability must minimize potential for water-related damages.
A. True
B. False

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Air Barriers: Increasing Building Performance, Decreasing Energy Costs

Provided by DuPont Tyvek

The Metropolitan Club at Hotel ZaZa.
It is located at 2403 Thomas Ave., Dallas, TX.

Controlling air leakage is an important factor in maintaining a building's energy efficiency. According to the United States Department of Energy, some 40 percent of the energy of heating and cooling a building is lost by uncontrolled air leakage through the building enclosure. As a result, North American energy codes have started to address airtight qualities in buildings. Uncontrolled air leakage could have consequences beyond increased energy consumption, regarding health and safety of the building occupants, as well as premature deterioration of building materials.

This article will focus on air barrier membranes, which are materials specifically designed to control airflow. Lightweight, yet strong, air barrier membranes can control unwanted air leakage and create an airtight building, while enhancing the comfort of interior environments, building envelope durability, and energy efficiency in a way that's cost effective and visually unobtrusive. And the payoff in energy savings can be significant. A 2005 National Institute of Standards and Technology (NIST) study indicates that an air barrier system could reduce air leakage by up to 85 percent, and realize a 40 percent savings in natural gas, and a 25 percent savings in electricity.

> ***Lightweight, yet strong, air barrier membranes can control unwanted air leakage and create an airtight building, while enhancing the comfort of interior environments, building envelope durability, and energy efficiency in a way that's cost effective and visually unobtrusive. And the payoff in energy savings can be significant.***

The energy implications of air barriers are significant," says Peter J. Arsenault, AIA, NCARB, LEED-AP, principal of Peter J. Arsenault Architect in Syracuse, New York. "Air infiltration in a building can account for a nearly equal degree of energy loss as insulation values. In other words, R-values and insulation details account for about half of the heating and cooling energy use in a building. The other half is lost to air infiltration. Tests have shown a significant decrease in air infiltration with proper installation of air barriers."

CODES AND LEGISLATION RELATING TO AIR BARRIERS

Air barrier systems provide several advantages for building projects, including increased interior comfort, durability and energy efficiency. With these attributes, they are suitable for a variety of applications in various climates.

Air barriers have the potential to reduce air leakage to acceptable levels for less than $1.50/square foot of gross building area, and are often specified for buildings. Air barriers are typically regulated through energy codes, which recognize the importance of airtight buildings and energy efficiency. As of early 2006, several states have developed existing and pending legislation on air barriers, as well as compliance criteria.

CONTINUING EDUCATION

Use the learning objectives below to focus your study as you read **Air Barriers: Increasing Building Performance, Decreasing Energy Costs.** To earn one AIA/CES Learning Unit, including one hour of health, safety, welfare credit, answer the questions on page 211, then follow the reporting instructions on page 224 or go to the Continuing Education section on *archrecord.construction.com* and follow the reporting instructions.

LEARNING OBJECTIVES

After reading this article, you should be able to:

- *Explain recent trends in air barriers for buildings.*
- *Understand the physics of air and moisture movement through the building enclosure.*
- *Discuss air barrier functions, benefits and performance requirements.*
- *Select the appropriate air barrier for building projects.*

Summary of Existing and Proposed Energy Codes

Codes & Regulations	Compliance Requirements Air Infiltration, cfm/ft2 @ 0.30 in water (75Pa)		
	Material ASTM E2178	Assembly ASTM E1677	Whole Bldg. ASTM E779
The National Building Code of Canada (1995 NBC)	0.004	--	--
Massachusetts Energy Code (July 2001)	0.004	--	--
WI Energy Code	--	0.06	--
MN Energy Code (Proposal)	0.004	--	--
ASHRAE 90.1* (Proposal approved 2005)	0.004	0.04	0.4

* ASHRAE proposal has 3 compliance options: Material, Assembly, or Whole Building.
Summary of existing and proposed energy codes

The 1995 National Building Code of Canada (NBC code) requires a continuous air barrier for all commercial buildings. Massachusetts was the first state to adopt an energy code, in 2001, which is similar to the NBC code, and requires a continuous air barrier for commercial buildings. Wisconsin adopted an energy code in 2003. Minnesota is developing an energy code in early 2006, with similar compliance criteria as the Massachusetts energy code. In addition, as of 2003, the Envelope Design Guidelines for Federal Office Buildings and Multi-Family High Rise Residential Buildings require air barriers.

As air barriers are better understood and the benefits are documented, more jurisdictions will likely be following suit. In 2005, the American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE) approved an amendment to the ASHRAE 90.1 model energy code that would require an air barrier for most commercial buildings in most climate zones. With their clear advantages and the imminent code requirements, it's critical that architects understand the air barrier functions and benefits, and how to specify them.

THE PHYSICS OF AIR AND MOISTURE TRANSPORT THROUGH THE BUILDING ENCLOSURE

To gain a proper working understanding of the role of air barriers in building enclosures, some basic terminology and fundamental physics must first be defined. The building enclosure, also known as the building envelope, refers to the part of the building that physically separates the interior conditioned space from the exterior environment. Its main function is to control all loadings due to separation of the two environments, the flow of mass and flow of energy. Air barriers are an important component of the building enclosure.

Air Leakage

Air leakage through the building enclosure refers to the unplanned, unpredictable, and unintentional airflow in or out of buildings, and must be distinguished from the intentional and, ideally, controlled flow of outdoor air into a building via either a mechanical or a ventilation system. A building can be very tight in terms of air leakage and have sufficient ventilation; conversely, a building could be very leaky and have insufficient ventilation. In mechanically ventilated buildings, it is desirable to have an airtight building enclosure, which is achieved by connecting materials with high air infiltration resistance into a continuous air barrier system.

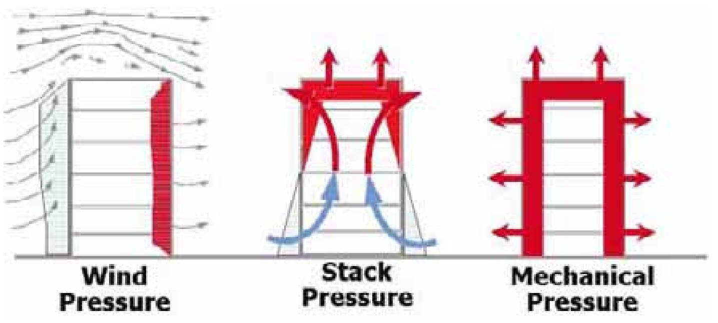
In order for air leakage to occur, there must be a driving force and a pathway. The driving force for air leakage is the difference in total air pressure across the building enclosure, with airflow occurring from higher to lower pressure, or from positive to negative pressure. There are three main sources of air pressure difference.

The wind pressure is a significant factor and it is usually high (positive) on the windward side, and low (negative) on the leeward side of the building. When averaged over the course of a year, industry experts estimate that wind pressure is about 10 to 15 miles per hour (0.2 to 0.3 pounds per square foot) in most locations in North America.

Stack pressure (also called chimney effect or buoyancy) is caused by the atmospheric pressure difference between the top and bottom of a building, which is in turn caused by the temperature difference and hence the difference in the weight of the columns of indoor and outdoor air. In cold climates, during winter, the stack effect can cause infiltration of cold air at the bottom and exfiltration of warmer air at the top of the building. The reverse occurs in summer, with air conditioning.

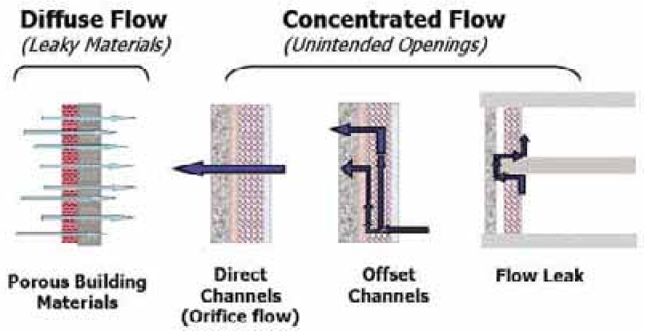
Mechanical pressure is caused by heating, ventilation and air conditioning (HVAC) system pressurization. HVAC engineers tend to design buildings with slight positive pressures in order to reduce infiltration and associated pollution. However, this practice might not be ideal in some climates, such as in cold climates.

Main Sources of Air Pressure Differentials in Buildings



The main types of airflow pathways include diffuse flow and concentrated pathways. Diffuse flow occurs through leaky materials and assemblies, such as fibrous insulation, uncoated masonry (such as concrete masonry units and brick), or other porous building materials. Concentrated flow occurs through unintended openings. Direct channel flow or orifice flow, which occurs when the air enters and exits in a direct path, has the highest cost penalty because of high energy loss. Offset channel leaks are the most damaging because of longer pathways, which allow for air to change its temperature and to reach the dew point within the building enclosure leading to interstitial condensation. Flow leaks occur between floors and could add to stack effect.

Air Flow Pathways



Moisture Transport

Moisture moves through the building enclosure as liquid water or as water vapors. The difference between the two physical states of water is the size of the molecular aggregates: liquid water exists as large molecular aggregates (up to 100 molecules at room temperature), while water vapors exist as free molecules. Consequently, the transport mechanisms are different for liquid water and water vapors.

Liquid water

The main source of liquid water for above grade walls is rain, which can infiltrate behind the exterior cladding and be driven into the building enclosure by four main forces:

Gravity can draw water down through openings and cracks, and into the construction assembly.

Capillary forces act like a sponge sucking water through small cracks and pores. Smaller cracks result in greater capillary forces.

Rain droplets can pass through openings in the exterior cladding, driven by the momentum of falling rain drops.

The pressure differential can push or suck water through openings and cracks, into the construction assembly.

There are three basic types of exterior wall design, from the standpoint of rain penetration control.

- Face-sealed (barrier) walls rely upon every seam and crack to be face sealed. This design requires detailed workmanship and continuous maintenance, and is most vulnerable to rain infiltration. This design is effective only in areas with low wind and rain exposure. Examples of barrier walls include non-drainage Exterior Insulation Finish Systems (EIFS) and face-sealed curtain walls.
- Concealed barrier walls rely on multiple layers for rain penetration control. In contrast to face-sealed systems, these walls include a drainage plane within the wall assembly that functions as a second line of defense against water intrusion. The drainage plane is usually a water resistive barrier membrane. This design is effective in areas with moderate wind and rain exposure. A typical example of a concealed barrier wall is the drainage stucco system.
- Drained cavity or rain screen walls rely on two layers and a drained cavity space for rain penetration control. This design is similar to the concealed barrier system in that it provides two lines of defense, but it offers additional features, such as capillary breaks between porous materials, freer drainage, and venting or ventilation to limit average relative humidity (RH)) outside of sheathing. This design is most effective in rain penetration control and should be used in areas with high wind and rain exposure. Examples of rain screen walls include brick-veneer cavity walls, furred-out clapboard walls, and drainable EIFS walls.

Water vapor can be transported through the building enclosure by air currents and by vapor diffusion. Air currents could carry significant amount of moisture vapors into the building enclosure. A continuous air barrier will control airflow, hence the moisture migration through air currents. Air-transported moisture must not be confused with vapor diffusion.

For water vapor diffusion to occur there has to be a driving force and a pathway. The driving force for water vapor diffusion is the difference in water vapor concentration or difference in vapor pressure across an assembly: water vapors flow from an area of higher concentration (higher vapor pressure) to an area of lower concentration (lower vapor pressure). The ability of materials to allow vapor diffusion is measured by vapor permeability, which is expressed in perms: the higher the perms, the higher the vapor permeability.

The 2003 International Building Code (IBC) classifies building materials into vapor permeable (greater than five perms) and vapor non-permeable (less than one perm). Vapor non-permeable materials are called vapor barriers or vapor retarders. Other terms often used to describe vapor permeable or non-permeable materials are "breathable" and "non-breathable," respectively.

"Breathability is often associated with air flow, rather than moisture vapor flow," notes Maria Spinu, Ph.D., Building Science Manager, Dupont Building Innovation. "The use of this terminology may have contributed to the confusion between an air barrier versus a vapor barrier function." While the two functions could be performed by a single material, providing an air and vapor barrier, the needs addressed are quite different. Air barriers retard airflow, which is the result of air pressure differences. Vapor barriers retard water vapor flow, which is the result of water vapor concentration differences.

Experts estimate that the amount of moisture vapor transported by air currents can be 100 to 200 times higher than the amount transported by vapor diffusion, and can account for more than 98 percent of all water vapor movement through the building enclosure.

In summary, there are three main moisture sources, which could lead to water problems in buildings: bulk water, air transported moisture, and vapor diffusion. "The three moisture sources do not contribute equally to the wetting of the building enclosure," says Spinu. Liquid or bulk water infiltration is usually the largest wetting source for above-grade walls, followed by air transported moisture, which is significantly higher than the amount of water vapor transported by diffusion. It is generally accepted that the buildings will occasionally get wet; however, moisture problems in buildings will occur if wetting exceeds drying. Consequently, in order to prevent moisture problems it is essential to protect the enclosure against wetting and promote drying. Although moisture movement by diffusion cannot be discounted as a wetting source, it should not be the primary focus for moisture intrusion control; vapor diffusion, however, is critical for drying.

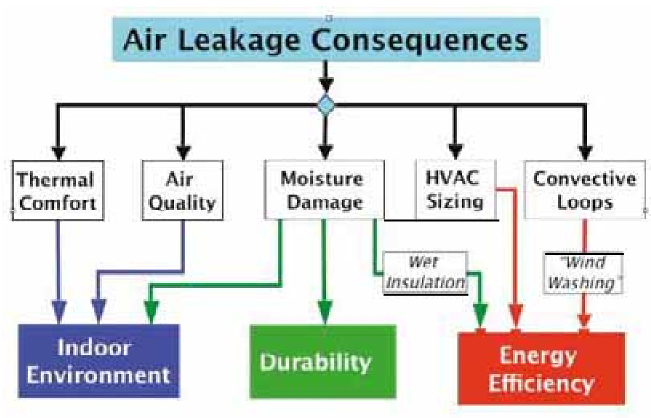
> ***Experts estimate that the amount of moisture vapor transported by air currents can be 100 to 200 times higher than the amount transported by vapor diffusion, and can account for more than 98 percent of all water vapor movement through the building enclosure.***

AIR BARRIER FUNCTIONS AND BENEFITS

Uncontrolled air leakage could negatively impact building occupant comfort, durability of building materials, and energy consumption levels. Air barriers play a critical role in controlling these effects of air leakage.

The primary function of an air barrier is to control air leakage in order to avoid undesirable consequences.

Consequences of Air Leakage through the Building Enclosure



Air movement can create drafts affecting thermal comfort, or carry contaminants and moisture through the building enclosure, affecting indoor air quality and safety of the occupants. Excess moisture can also condense on interior surfaces and cause premature degradation of building materials, such as corrosion of metal and rotting of wood. Unintentional air leakage could lead to increased energy use in at least three different ways: over sizing of HVAC equipment to compensate for the heating and cooling loss through air leakage; loss of effective R-value due to wetting of thermal insulation by moisture transported through air currents; and loss of effective R-value due to convective loops, also known as the wind-washing effect.

In addition to their primary function, air barriers can protect against water intrusion, in which case they are air and water resistive barriers. Some air barriers also control vapor diffusion, in which case they are air and vapor barriers. Air, water and vapor barriers play a critical role in managing air and moisture movement through the building enclosure. "Unfortunately, there is still confusion on the functionality associated with different barrier membranes, especially when a single membrane performs multiple functions," says Spinu, noting that the most common confusion is between air barrier and vapor barrier functions. "While air barriers can and should be used in all climates, vapor barriers are climate specific," she adds.

AIR BARRIER PERFORMANCE REQUIREMENTS

There are four main performance requirements for air barriers: air infiltration resistance, continuity, structural integrity, and durability.

Air infiltration resistance: An air barrier must resist airflow. While there are no mandatory requirements at the national level, individual states have adopted energy conservation codes that require air tightness and allow for different compliance options for air infiltration resistance of air barrier materials, assemblies, or whole buildings (as previously described).

> *Uncontrolled air leakage could negatively impact building occupant comfort, durability of building materials, and energy consumption levels. Air barriers play a critical role in controlling these effects of air leakage.*

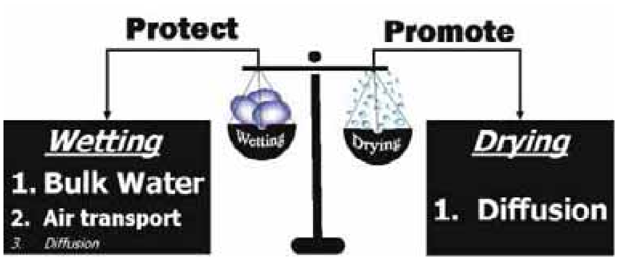
Continuity is a critical requirement for air barriers, and depends on both design and execution. The first step is to detail the air barrier continuity in the drawings. "A continuous line of air tightness must be traced through every exterior wall detail, and every connection between air barrier components," says Spinu. The most critical connections include: the roof and wall; wall and foundation; wall and floors; wall and window or door interfaces; joints between various types of exterior wall systems, and penetration details. The design details must then be properly implemented in the field. The air barrier system includes the primary air barrier membranes and the installation and continuity accessories, such as mechanical fasteners, tapes, flashing, caulks, sealants, and primers.

Structural integrity is another attribute of an effective air barrier. Air barriers must be able to withstand pressure loads or be able to transfer the load to other elements of the building envelope without rupture or displacement. For mechanically fastened building wraps, the type of mechanical fasteners and their spacing are important for structural integrity, and the installation must be done according to the manufacturer's instructions.

Finally, air barriers must be durable. They must be able to withstand environmental exposure, including exposure to ultraviolet (UV) rays, thermal cycles, and mechanical pressure. These requirements extend from the construction cycle through the service life of the enclosure. If that life-cycle requirement can't be met, then an air barrier must be accessible for periodic maintenance.

In addition to these basic requirements, an air barrier membrane should also balance the critical barrier properties for optimum moisture management: air infiltration resistance, water resistance, and vapor permeability. The air barrier membrane should combine high resistance to water penetration and air infiltration (to protect against bulk water intrusion and moisture transported by air currents, respectively), with optimum moisture vapor permeability to allow drying from incidental moisture. The balance of properties is generally difficult to achieve, because the three barrier properties have competing demands. Consequently, only few materials achieve this optimum balance, while most excel in one or two categories.

Wetting vs. Drying of Building Enclosure



The multiple consequences of uncontrolled airflow may result in potential liability issues for the entire building community. Architects, consultants, and engineers could be held liable for moisture damage in buildings because of faulty design or poor material selection. Contractors' workmanship can be called into question when water damage is due to poor execution of the intended design or unauthorized material substitution. Building owners may be held responsible for poor indoor air quality, mold problems or lack of thermal comfort. With serious consequences for the design and building industry professionals, building owners and building users, it behooves all members of the building team to pay close attention to controlling unwanted air flow and selecting the proper barrier method.

SELECTING APPROPRIATE AIR BARRIERS

There are many types of commercial air barrier membranes. Based on the method of application, there are three main types of air barriers: mechanically fastened (building wraps); peel-and-stick or self-adhered; and fluid applied. Based on vapor permeability, air barrier materials are vapor permeable and vapor non-permeable. Mechanically fastened membranes are vapor permeable; some fluid applied membranes have limited vapor permeability; all others are vapor non-permeable. While the application method is often a personal preference, the vapor permeability of air barrier membranes has performance implications, which must be considered when selecting an air barrier. As a general rule, vapor permeable air barriers can and should be used in all climates, while vapor non-permeable air barriers (air and vapor barriers) are climate specific. ■

CLICK FOR ADDITIONAL REQUIRED READING

The article continues online at ***http://archrecord.construction.com/resources/conteduc/archives/0601duponttyvek-1.asp.*** To receive AIA/CES credit, you are required to read this additional text. The quiz questions below include information from this online reading. To receive a faxed copy of the material, call DuPont™ Tyvek®: 1-800-448-9835, Prompt #1 or E-mail: tyvek.construction@usa.dupont.com.

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LEARNING OBJECTIVES

After reading this article, you should be able to:

- *Explain recent trends in air barriers for buildings.*
- *Understand the physics of air and moisture movement through the building enclosure.*
- *Discuss air barrier functions, benefits and performance requirements.*
- *Select the appropriate air barrier for building projects.*

INSTRUCTIONS

Refer to the learning objectives above. Complete the questions below. Go to the self report form on page 224. Follow the reporting instructions, answer the test questions, and submit the form. Or use the Continuing Education self report form on *Record's* web site—*archrecord.construction.com*—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

QUESTIONS

1 The driving force for air leakage is:
  - **a.** The difference in total air pressure across a building assembly, with airflow occurring from positive to negative pressure.
  - **b.** The difference in total air pressure across a building assembly, with airflow occurring from negative to positive pressure.
  - **c.** Stack Pressure
  - **d.** Leaky materials in the building envelope

2. What is the driving force for vapor diffusion:
  - **a.** The difference in the total air pressure between the interior and exterior of the building.
  - **b.** The difference in water vapor concentration or difference in vapor pressure across an assembly.
  - **c.** The difference in atmospheric pressure at the top and bottom of a building due to difference in temperature.
  - **d.** Water intrusion into a building

3. What is the largest wetting source for above grade walls:
  - **a.** Air transported moisture
  - **b.** Vapor diffusion
  - **c.** Liquid or bulk water infiltration
  - **d.** Uncontrolled air flow

4. What is the primary function of an air barrier?
  - **a.** Water resistance
  - **b.** Vapor resistance
  - **c.** To prevent air leaking through porous materials
  - **d.** To control air leakage

5. An additional air barrier function is:
  - **a.** Controlling air flow
  - **b.** Protecting water intrusion
  - **c.** Preventing mold growth
  - **d.** Eliminating pollutants

6. Air barrier requirements include:
  - **a.** Ability to withstand pressure loads or be able to transfer the load
  - **b.** Durability
  - **c.** Continuity
  - **d.** All of the above

7. An effective air barrier should have:
  - **a.** High resistance to liquid water penetration
  - **b.** High resistance to air infiltration
  - **c.** Optimum moisture vapor permeability
  - **d.** A balance of critical properties

8. A key consideration when selecting an air barrier system for a building enclosure is:
  - **a.** Vapor transmission
  - **b.** Climate
  - **c.** Sustainability
  - **d.** Site design

9. What type of air barrier can and should be used in all climates and all wall designs?
  - **a.** Vapor non-permeable
  - **b.** Vapor permeable
  - **c.** Mechanically fastened
  - **d.** Self-adhered

10. Vapor non-permeable air barriers must be located:
  - **a.** On the cold side of the thermal insulation
  - **b.** On the warm side of the thermal insulation
  - **c.** Anywhere in the wall assembly
  - **d.** None of the above

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By Stanley Stark, FAIA

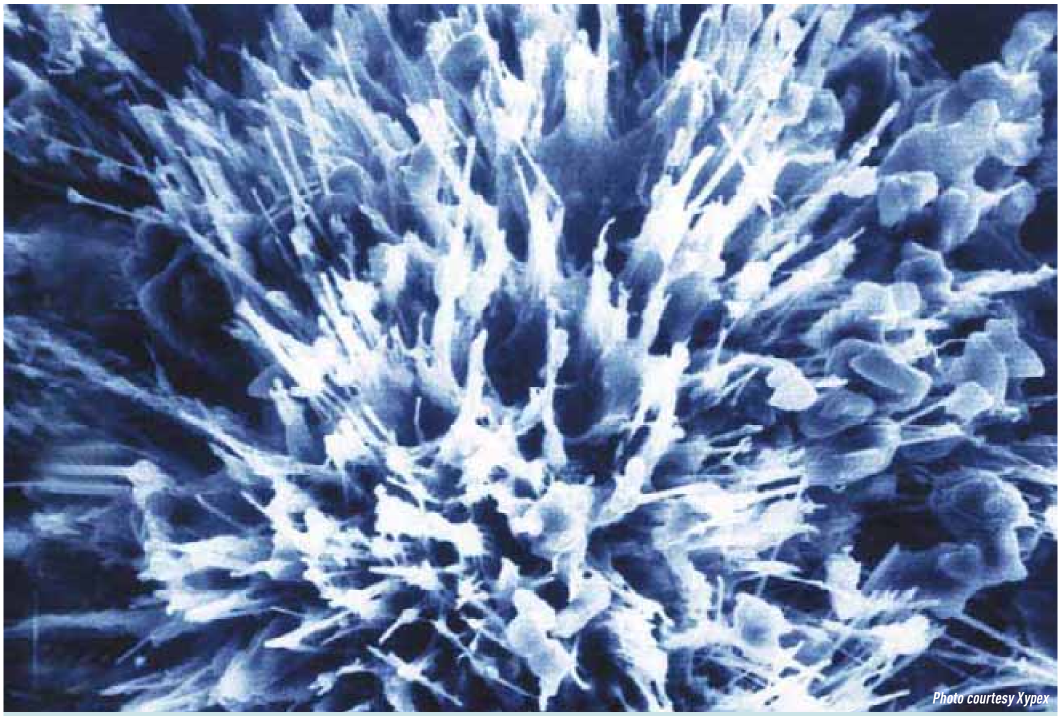


Photo courtesy Xypex

From foundations, floor slabs and exterior precast panels, to water treatment facilities and underground urban infrastructure, concrete is one of the most commonly used building and construction materials. However, due to its composition, a mixture of rock, sand, cement, and water, concrete is often susceptible to damage and deterioration from water and chemical penetration.

These deleterious effects can be avoided through the use of crystalline waterproofing technology, which effectively improves the durability and lifespan of concrete structures, thereby reducing long-term maintenance costs. This article explores how crystalline technology provides a high level of performance to concrete mixtures, materials, and structures, and what design professionals need to know in order to specify and understand how this chemical technology will enhance building projects.

> ***Due to its composition, a mixture of rock, sand, cement, and water, concrete is often susceptible to damage and deterioration from water and chemical penetration.***

CONTINUING EDUCATION

Use the learning objectives below to focus your study as you read **Concrete Waterproofing with Crystalline Technology.** To earn one AIA/CES Learning Unit, including one hour of health, safety, welfare credit, answer the questions on page 217, then follow the reporting instructions on page 225 or go to the Continuing Education section on *rchrecord.construction.com* and follow the reporting instructions.

LEARNING OBJECTIVES

After reading this article, you should be able to:

- *Understand how crystalline technology works with concrete to provide high performance waterproofing qualities.*
- *Explain the difference between porosity, permeability and the mechanics by which water is absorbed through concrete structures.*
- *Discuss how crystalline waterproofing technology improves the durability of concrete structures and reduces maintenance.*
- *Identify appropriate crystalline technology product applications for various types of concrete construction.*
- *Analyze how crystalline technology admixtures can impact building life cycle and project construction costs.*

The Nature of Concrete

The aggregate base of a concrete mixture is formed by rock and sand. This cement and water mixture creates a paste that binds the aggregates together. As the cement particles hydrate, or combine with water, they form calcium silicate hydrates. The mixture then hardens into a solid, rock-like mass.

Concrete is also a water-based product. To make this mixture workable, easy to place, and consolidate, more water than is necessary for the hydration of the cement is used. This extra water, known as the water of convenience, will bleed out of the concrete, leaving behind pores and capillary tracts. Although concrete appears to be a solid material, it is both porous and permeable.

> ***Concrete is both porous and permeable.***

Water reducers and superplasticizers are used to reduce the amount of water in the concrete mix, and maintain its workability. However, pores, voids, and capillary paths will remain in cured concrete and can carry water and aggressive chemicals into structural elements that will corrode steel reinforcement and deteriorate concrete, thus jeopardizing the structure's integrity.

The Porous and Permeable Nature of Concrete

Concrete is best described as a porous and permeable material. Porosity refers to the amount of holes or voids left in concrete, is expressed as a percentage of the total volume of a material. Permeability is an expression of how well the voids are connected. Together, these qualities allow pathways to form that allow the movement of water into, and through, along with the cracking that occurs due to shrinkage.

Permeability, a broader term than porosity, is the ability of liquid water under pressure to flow through porous material. Permeability is described by a quantity known as the permeability coefficient, commonly referred to as D'Arcy's Coefficient. The water permeability of a concrete mix is a good indicator of the quality of the concrete for durability reasons. The lower D'Arcy's Coefficient, that is, the more impervious, the higher the quality of the material. Nevertheless, a concrete with low permeability may be relatively durable but may still need a waterproofing agent to prevent leakage through cracks.

Despite its apparent density, concrete remains a porous and permeable material that can leak and deteriorate rapidly when in contact with water or the intrusion of aggressive chemicals, such as carbon dioxide, carbon monoxide, chlorides, sulfates or other substances. But there are other ways in which water can be transported through concrete.

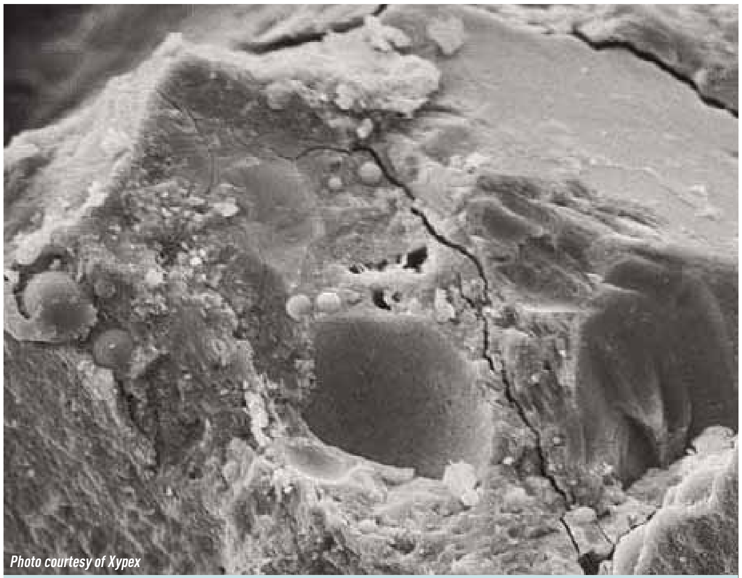


Photo courtesy of Xypex

Magnified view of microcrack.

Vapor Flow and Relative Humidity

Water also migrates in the form of water vapor as relative humidity. Relative humidity is water held in air as a dissolved gas. As water vapor heats up, it contains more water and exerts vapor pressure. Water can also be transported through concrete as vapor. The direction of flow travels from high vapor pressure, generally the source, to low vapor pressure, by a process of diffusion. The direction of flow could vary based on environmental conditions. The direction of vapor flow is critical when applying waterproofing treatment in situations where an unbalanced vapor pressure gradient exists. Typical examples include:

- Applying a low vapor permeable membrane, such as a traffic deck coating over a damp concrete surface (even if the very top surface is dry) on a warm day will result in pressure vapor pressure build-up and pin-holing or blistering.
- Applying a coating or sealant to the outside of a building wall may trap moisture into the wall if the sealant is not sufficiently vapor permeable.
- Applying low vapor permeable flooring over a slab-on-grade where there is high subsurface moisture content may result in delamination of the flooring.

Generally, a low vapor permeable sealant or coating should not be placed on the downstream face of a building or structure. Either the vapor pressure or water pressure will act to damage and blister the membrane. Some types of coatings and water permeability reducing admixtures in the concrete accommodate considerable vapor movement, thus allowing them to be placed successfully on the downstream side. Primary examples are cement-based waterproof coatings and water permeability reducing admixtures.

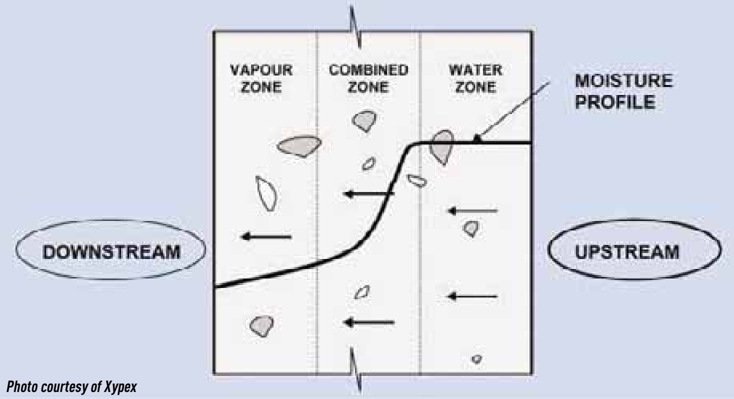


Photo courtesy of Xypex

Vapor flow through a foundation wall.

How Crystalline Waterproofing Technology Works

Crystalline technology improves the durability and performance of concrete structures, lowering their maintenance cost and extending their lifespan by protecting them against the effect of aggressive chemicals. These high performance qualities result from the ways in which the crystalline technology works, when used with concrete.

Crystalline waterproofing technology improves the waterproofing and durability of concrete by filling and plugging pores, capillaries, micro-cracks, and other voids with a non-soluble, highly resistant crystalline formation. The waterproofing effect is based on two simple reactions, one chemical and one physical. Concrete is chemical in nature. When a cement particle hydrates, the reaction between water and the cement causes it to become a hard, solid mass. The reaction also generates chemical by-products that lie dormant in the concrete.

Crystalline waterproofing adds another set of chemicals to the mixture. When these two chemical groups, the by products of cement hydration and the crystalline

> ***Crystalline technology improves the durability and performance of concrete structures, lowering their maintenance cost and extending their lifespan by protecting them against the effect of aggressive chemicals.***

chemicals, are brought together in the presence of moisture, a chemical reaction occurs. The end product of this reaction is a non soluble crystalline structure.

Crystalline technology improves the waterproofing and durability of concrete by filling voids with a non-soluble, highly resistant crystalline formation.

This crystalline structure can only occur where moisture is present, and thus will form in the pores, capillary tracts, and shrinkage cracks in concrete. Wherever water goes, crystalline waterproofing will form filling the pore, voids and cracks.

When crystalline waterproofing is applied to the surface, either as a coating or as a dry-shake application to a fresh concrete slab, a process called chemical diffusion takes place. The theory behind diffusion is that a solution of high density will migrate through a solution of lower density until the two equalize.

Thus, when concrete is saturated with water prior to applying crystalline waterproofing, a solution of low chemical density is also being applied. When crystalline waterproofing is applied to the concrete, a solution of high chemical density is created at the surface, triggering the process of chemical diffusion. The crystalline waterproofing chemicals must migrate through the water (the solution of low density) until the two solutions equalize.

The crystalline waterproofing chemicals spread through the concrete and become available to the byproducts of cement hydration, allowing the chemical reaction to take place. A crystalline structure is formed, and as the chemicals continue to migrate through the water, this crystalline growth will form behind this advancing front of chemicals. The reaction will continue until the crystalline chemicals are either depleted or run out of water. Chemical diffusion will take these chemicals about 12 inches into the concrete. If water has only soaked two inches into the surface, then the crystalline chemicals will only travel two inches and stop but, they still have the potential to travel 10 inches further, if water re enters the concrete at some point in the future and reactivates the chemicals.

Instead of reducing the porosity of concrete, like water reducers, plasticizers, and superplasticizers, the crystalline formation engages the material filling and plugging the voids in concrete to become an integral and permanent part of the structure.

Photo courtesy of Xypex

Example of concrete deterioration caused rusting of the reinforcing steel.

Because these crystalline formations are within the concrete and are not exposed at the surface, they cannot be punctured or otherwise damaged like membranes or surface coatings. Crystalline waterproofing is highly resistant to chemicals where the pH range is between three and 11 under constant contact, and two to 12 under periodic contact. Crystalline waterproofing will tolerate temperatures between -25 degrees Fahrenheit (-32 degrees Centigrade) and 265 degrees Fahrenheit (130 degrees Centigrade) in a constant state. Humidity, ultraviolet light, and oxygen levels have no impact on the products ability to perform.

Crystalline waterproofing offers protection against the following agents and phenomena:

- Inhibits the effects of CO, CO2, SO2 and NO2, the gasses responsible for the corrosive phenomenon known as 'carbonation.' Carbonation is the process where exterior gasses create a corrosive phenomenon that softens the surface layers of the concrete. Carbonation testing shows that the multiplicative crystalline formations also reduce the flow of gases into concrete, thus significantly retarding the carbonation at the surface in which the alkalinity is reduced and the surface layer is softened.

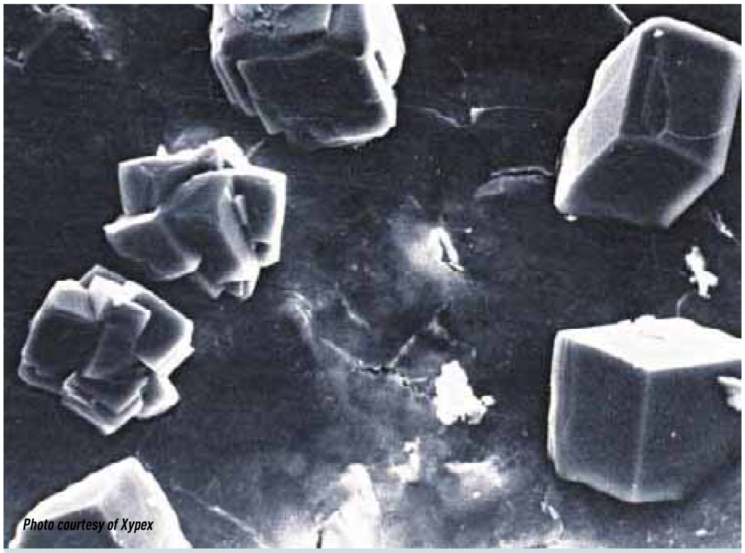


Photo courtesy of Xypex

Scanning electron microscope (SEM) view of a concrete pore before the application of crystalline waterproofing.

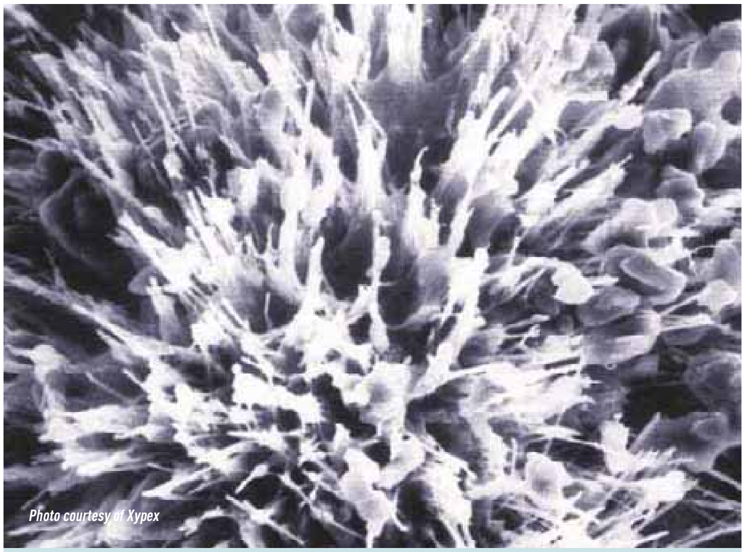


Photo courtesy of Xypex

Scanning electron microscope (SEM) view of a concrete pore filled with multiplicative crystalline formation, initial stages.

- Protects concrete against alkali aggregate reactions (AAR) by denying water to those processes affecting reactive aggregates.
- Extensive chloride-ion diffusion testing shows that concrete structures protected with a crystalline waterproofing treatment prevent the diffusion of chlorides. This protects reinforcing steel and prevents deterioration that could occur from oxidation and expansion of steel reinforcement.

Michael Brown, P.E., principal with Golder Associates in Seattle, has used crystalline waterproofing in numerous applications, but notably on the Blackbird mine remediation project near Salmon, Idaho, which has very low pH acidic mine water flowing through concrete structures. "We use crystalline waterproofing technology as an additive to concrete to reduce permeability and provide protection for the epoxy coated reinforcing bar," said Brown.

The more traditional methods of protecting concrete, such as membranes and other coatings, may still leave it susceptible to water and chemical damage. Only with the addition of crystalline technology can the pores and microcracks that normally result from the process of setting and curing, allow concrete to be sealed.

Type of Construction and Appropriate Crystalline Technology Application

Crystalline waterproofing and protection technology is available in powder form and is mixed with water. Three different application methods include:

- Applied to the surface of an existing concrete structure, for example, a foundation wall or a floor slab.
- Mixed directly with the concrete batch at the plant as an admixture.
- Shaken as a dry powder, applied to green, or uncured, concrete and toweled into the surface.

Methods and Procedures of Crystalline Waterproofing Coating Applications

When applied to clean, bare and previously saturated substrate as a slurry mixture, the reactive chemical ingredients in crystalline waterproofing can penetrate up to 12 inches deep inside the concrete by using the water as the migrating solution in a process of chemical diffusion. As these chemicals penetrate through the capillaries and pores, the reaction with the mineral by-products of cement hydration creates the crystalline formation that fills the cracks or the pore.

Crystalline waterproofing can be applied by a brush or with spray-on equipment. To ensure the success of the application, care must go into the conditions under which the material is applied related to surface preparation, surface wetting, coat thickness, and curing time.

Because the crystalline waterproofing coating system has a unique chemical diffusing characteristic, proper surface preparation of the concrete is critical to the performance of the material. The concrete surface that will receive the crystalline waterproofing coating needs to have an open pore texture to allow the transfer of the reactive crystalline chemicals from the coating into the concrete substrate. The surface also needs to be clean and free of form oil, laitance and other foreign matter as this can potentially cause delamination of the coating.

The three common methods of concrete surface preparation are water blasting, sand blasting and acid etching. When water blasting, the pressure should be 3,000 pounds per square inch (psi) to 4,000 psi. Sand blasting is normally required when steel forms have been used and the concrete has a tight, mirror like finish. Acid etching can be accomplished using either muriatic acid or citrus-based products when the use of an acid is not environmentally acceptable.

Wetting the Surface

The coating systems require that the concrete be in a saturated, surface damp condition for the waterproofing to be effective. The active chemicals in the coating use water as a migrating or diffusing medium that allows the chemicals to transfer from the coating into the capillary tracts of the concrete. To make sure that concrete on vertical surfaces is saturated, wet the walls with clean water and allow the moisture to be drawn into the substrate for approximately ten minutes. Re-wet the walls a second time and allow to stand for 20 minutes.

In hot weather, when evaporation rates are high, it may be necessary to soak the concrete overnight. This can be accomplished using either soaker hoses on the top of the wall, that allows water to flow down the vertical surfaces, or a series of sprinklers can be used if the wall is less than 12 to 15 feet.

If water is not readily available on the job site, the saturation of the concrete should be done early in the morning, when evaporation rates are low and before the concrete begins to heat up. In difficult conditions of hot sun and wind, it is better to attempt small areas that can be controlled, rather than large areas at one time. In hot weather, the use of an evaporation retarder to help keep moisture in the concrete can be considered.

In cold weather, saturation of the concrete should only take place when the ambient temperature is going to be above 33 degrees Fahrenheit for 24 hours.

Coating Application

The crystalline waterproofing coating materials are mixed with water at a ratio of five parts powder to two parts water by volume for brush application, and five parts powder to three parts water by volume for spray application. The coverage rate is 1.25 to 1.5 pounds per square yard per coat. At this rate, a 60-pound pail of material will cover 360 to430 square feet, and a 50-pound bag will cover 300 to360 square feet of surface area.
Coatings can be applied by brush, hopper gun or specialized spray equipment. When using a standard six-inch masonry brush, one person can mix and apply approximately 80 to100 square feet per hour per coat. A hopper gun or texture gun uses a two-person crew with one person mixing material and the second person spraying. The gun uses a three-eighths inch nozzle and operates at roughly 25 psi. A two-person crew can apply the coating at a rate of 400 to500 square feet per hour per coat.

Specialized spray equipment is operated with a three-person crew. At application rates of 1200 to1500 square feet per hour per coat, it is necessary to have all materials pre-measured in order to keep up with the spray equipment capacity. When using this type of equipment, the best procedure is to pre-measure the powder into at least five or six large buckets (five gallon pails) and pre-measure the water. This is done on the basis of five parts powder to three parts water by volume.

On vertical surfaces, the standard application procedure is to start at the top of the wall and work down. When using spray equipment, the first coat of material can be back-brushed using a 20-inch wide janitors broom with a soft bristle or a finisher's broom. This helps ensure an even coverage rate and minimizes any run down of the coating.

When a second coat is specified, it needs to be applied no later than 48 hours after the first coat. Under normal conditions, the crystalline waterproofing coating will begin to set up in two to three hours and application of the second coat can be done at this time. If the first coat has dried out, it should be lightly moistened with water prior to the second coat being applied. Failure to do so may result in lack of bond between the two coats.

When applying the coating materials to a concrete structure, it is better to break the job up into manageable segments rather than try to complete large areas at one time. This becomes even more critical when the weather is hot or windy. ■

CLICK FOR ADDITIONAL REQUIRED READING

The article continues online at ***archrecord.construction.com/resources/conteduc/archives/0601xypex-1.asp***. To receive AIA/CES credit, you are required to read this additional text. The quiz questions below include information from this online reading. To receive a faxed copy of the material, call Xypex Chemical Corp. at 800-961-4477.

AIA/ARCHITECTURAL RECORD **CONTINUING EDUCATION** Series

LEARNING OBJECTIVES

After reading this article, you should be able to:

- *Understand how crystalline technology works with concrete to provide high performance waterproofing qualities.*
- *Explain the difference between porosity, permeability and the mechanics by which water is absorbed through concrete structures.*
- *Discuss how crystalline waterproofing technology improves the durability of concrete structures and reduces maintenance.*
- *Identify appropriate crystalline technology product applications for various types of concrete construction.*
- *Analyze how crystalline technology admixtures can impact building life cycle and project construction costs.*

INSTRUCTIONS

Refer to the learning objectives above. Complete the questions below. Go to the self report form on page 225. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self report form on *Record's* website—*archrecord.construction.com*—to receive one AIA/CES Learning Unit including one hour of health, safety, welfare credit.

QUESTIONS

1. Porosity is a measure of:
a. Density
b. Voids as a percentage of volume
c. Liquid flow rate
d. Relative compressive strength
e. Unit weight

2. Concrete is permeable and porous due to:
a. Poor workmanship
b. Insufficient curing time
c. Incorrect concrete mix
d. Voids created by water in the mix and cracking due to shrinkage
e. Flaws in the formwork

3. Concrete surface coatings and membranes susceptible to all of the following except which?
a. Puncture
b. Deterioration and wear
c. Blistering
d. Delamination
e. Poor adhesion

4. D'Arcy's Coefficient is an indicator of:
a. Permeability
b. Porosity
c. Density
d. Design strength
e. Deflection

5. Crystalline technology offers protection against all of the following except which?
a. Carbonation
b. AAR
c. Chloride ion diffusion
d. Oxidation due to water penetration
e. Heat migration promoting cracking

6. Crystalline technology works by which mechanism?
a. Plugs holes and voids with a solid cement material
b. Reacts with concrete to fill voids and cracks with crystalline growth
c. Shifts aggregate material into the voids
d. Fill voids with a plastic water resistant material generated by chemical reaction
e. Seals openings and channels within 2" of the surface

7. Carbonation is the process where:
a. Air bubbles form within the concrete
b. Carbon migrates from reinforcing steel to the surface staining the concrete
c. Exterior gasses create a corrosive phenomenon, which soften the surface layers of the concrete
d. Steel reinforcement oxidizes.
e. Water is trapped within the concrete

8. Crystalline waterproofing surface application can penetrate up to:
a. 12 inches
b. 10 inches
c. 8 inches
d. 4 inches
e. 2 inches

9. For surface crystalline waterproofing applications under normal conditions, the treated surface should be:
a. Sprayed six times a day
b. Sprayed three times a day for two to three days to prevent premature drying
c. Maintained in a saturated condition for two days
d. Saturated for one day, sprayed three times daily for the next day
e. Saturated for only one day only

10. The major threat created by the diffusion of chlorides is:
a. Surface delamination
b. Reduction of the bond between cement and aggregates
c. Increase in the volume of voids in the concrete
d. Softening of the concrete
e. Oxidation and expansion of steel reinforcement

XYPEX®

XYPEX Chemical Corporation is a manufacturer of crystalline waterproofing materials with an international network of distributors and licensees in over 70 countries. XYPEX has grown a successful reputation over the past 36 years by carefully integrating corporate marketing and research strategies around the needs of our customers. Our commitment to quality is on-going; our products and technical support are readily available worldwide; our product line meets the demands of value engineering; and our product R&D keeps pace with the advances in cement behavior research. XYPEX products have been specified and applied on thousands of major concrete structures around the world.

The Pros and Cons of Restoring and Replacing Wood Windows

Sustainability, historical accuracy and economics all enter into decisions about restoration or replacement

Provided by Artistic Doors and Windows, Inc.

By Karin Tetlow

Half a century ago, most architects were occupied with designing new buildings. Rarely did they debate the pros and cons of keeping any part of an existing structure, let alone the structure itself—unless the building had an established historical provenance. New construction cost less and was better, while restoring a building was often considered to be prohibitively expensive, and not worthwhile.

Times have changed. Today, more than 90 percent of construction already involves existing structures, many of which are historic, notes Kirk Cordell, executive director of the National Center for Preservation Technology and Training of the National Park Service. Restoring a city row house is now de rigueur, reinventing historic office buildings as condominiums is happening across the country, while industrial buildings and former churches are being adapted as offices, schools and housing.

Clearly, practitioners increasingly require the skills for restoration, adaptive reuse. Architectural graduates must also be prepared. "It's part of the basic toolkit they need to come in with as much as they need to learn CAD," says T. "Gunny" Harboe, AIA, vice president of the preservation group at Austin AECOM in Chicago.

Evaluating Significance

Since windows are arguably the most dominant visual element of a building, decisions regarding their treatment are critical. While ornamental windows and windows in historic buildings are clearly worth special attention, windows on any existing building—be it boathouse, townhouse or lighthouse—need to be analyzed.

Photo courtesy of HillierArchitecture

Virginia State Capitol, 1785-92, awaiting restoration by Hillier Architecture. Architect: Thomas Jefferson

CONTINUING EDUCATION

Use the learning objectives below to focus your study as you read **The Pros and Cons of Restoring and Replacing Wood Windows.** To earn one AIA/CES Learning Unit, including one hour of health, safety, welfare credit, answer the questions on page 222, then follow the reporting instructions on page 225 or go to the Continuing Education section on *archrecord.construction.com* and follow the reporting instructions.

LEARNING OBJECTIVES

After reading this article, you should be able to:

- *Analyze the choices between restoring and replacing old wood windows.*
- *Describe the components and functions of old and replacement wood windows.*
- *Examine design issues, options, alternatives, and recommendations for renovation of old wood windows.*

The first step is evaluating the significance of the windows and planning for their repair or replacement. This includes investigating historical significance, objective analysis of the windows themselves, and subjective considerations of the architectural brief—such as sustainability, historical integrity, adaptive reuse or saving taxpayer money.

Essential is an understanding of how windows are made and the sometimes arcane vocabulary of their components. For example, "stiles" are the vertical members of a sash, "meeting rails" are two horizontal members of the sash that come together, while "muntins" hold the window pane in the sash. Also essential is appreciating the basic functions of windows, such as admitting light, providing fresh air, providing a visual link to the outside, and enhancing the appearance of the building.

The Preservation Brief on ***The Repair of Historic Wooden Windows*** published by the National Park Service, characterizes 'significance' in the broadest terms. It states that windows should be considered significant to a building if they: are original, reflect the original design intent for the building, reflect period or regional styles or building practices, reflect changes to the building resulting from major periods or events, or are examples of exceptional craftsmanship or design.

"As 'character defining features,' windows are subject to a rather strict analysis," says Dr. George C. Skarmeas, AIA, Principal, Director of Historic Preservation for Hillier Architecture. He lists the areas in which all projects, small or large, simple or complex, are evaluated:

- Significance as character defining features. Determine if windows are original, and what changes have been made over time.

- Presence of significant fabric, information and historic evidence. This includes paint structure and history of paint layers, i.e. a comprehensive seriation analysis.
- Performance characteristics, both as an element of the original design, and construction and as an element of a new use plan. This area, he notes, is one of the most difficult to deal with.
- Overall condition assessment and organization in different categories of conditions and deterioration, such as good, moderate, and severe.
- Treatment options, including surface treatment to reconstruction and replacement.
- Construction costs
- Sequence of implementation. This embraces in-situ repairs to careful removal, and off-site restoration.

The information gained from such careful analysis, Skarmeas explains, will supply critical answers to a number of issues such as:

- The role windows play in the overall design of the historic resource.
- The important information they provide as part of the history of the building—its original colors, sequence of colors, and finishes.
- Clues as to how they have performed over time and where their weaknesses are.
- Deterioration patterns that may exist.
- Performance limitations against modern criteria and expectations, especially if there is a significant change in use.

A graphic or photographic system will record existing conditions and illustrate the scope of any necessary repairs. Another effective tool is a window schedule, which lists all of the parts of each window unit and notes their condition.

In any analysis the following should be noted:

- Window location
- Condition of the paint
- Condition of the frame and sill
- Condition of the sash, rails, stiles, and muntins
- Glazing problems
- Hardware
- The overall condition of the window such as excellent, fair, poor

Equally important is documentation regarding the qualities inherent in the windows, which make restoration worthwhile and, on occasion, have been known to evoke inspiration.

Many factors, such as poor design, moisture, vandalism, insect attack, and lack of maintenance can contribute to wood window deterioration, but moisture is the primary contributing factor in wooden window decay. Sills seem to fail first because they are exposed to beating sun, freezing rain, snow and bird droppings.

Conforming to Standards

Colonial sills pitch at a modest four or five degrees and are therefore more likely to collect moisture-trapping soot and dirt. Today's sills are usually pitched at a steeper 11 degrees and higher. The bottom rail on the lower sash is also likely to be more impaired because of its exposure to weather. The most deteriorated windows on houses are most likely to be found on the top floors. In the eastern U.S., west-facing facades take the brunt of wind-driven winter storms and rapid temperature drops after afternoons of baking winter sun.

Even if a building has been conscientiously maintained window deterioration occurs. The Georgian Federal landmark Pennsylvania Hospital in Philadelphia—the first hospital in the country—has reached a point where, after 250 years, one more coat of paint will not suffice. Termite damage, dry rot, powder beetles, and all kinds of conditions are under the paint, reports Alvin Holm, AIA, who is fund raising chair for the preservation of the original Pennsylvania Hospital building.

Preserving the original dimensions of muntins is a problem when replacing single panes of glass with thicker insulated panes. The widths of muntins have evolved from nearly one-and-three-eighths-inch during the Colonial period, one-and-one-eighth-inch during the Georgian period, seven-eighths-inch during the Federal period, to as little as one-half-inch during the Italianate period. One-half-inch was too thin for practical purposes, and muntins were often broken and removed, so that larger panes of glass could be installed, reports craftsman Torben Jenk, who has restored many buildings in the Philadelphia area. He notes that an important shadow-casting feature is removed when the depths of muntins are reduced to accommodate the thickness of double-glazing.

The Secretary of the Interior's Standards for Rehabilitation (www.cr.nps.gov) defines rehabilitation as "the process of returning a property to a state of utility, through repair or alteration, which makes possible an efficient contemporary use while preserving those portions and features of the property which are significant to its historic, architectural, and cultural values."

> ***Many factors, such as poor design, moisture, vandalism, insect attack, and lack of maintenance can contribute to wood window deterioration, but moisture is the primary contributing factor in wooden window decay.***

The critical paragraph reads: "The guidance that is basic to the treatment of all historic buildings—*identifying, retaining, and preserving* the form and detailing of those architectural materials and features that are important in defining the historic character—is always listed first in the "Recommended" area." This is summarized by every restoration architect as giving first preference to retaining and repairing original materials wherever possible, or replacing in kind.

Photo courtesy of HillierArchitecture

Parc Rittenhouse, Philadelphia, PA, before conversion by HillierArchitecture

These Standards are the historic preservation gold standard for national, state, local, and district authorities and preservation bodies. But buildings must confirm first to local landmark criteria, which, on occasion, are stricter in their interpretation. This can affect the project cost and construction phasing. An example is the conversion of the 1926, 17-story

Philadelphia Parc Rittenhouse, formerly the Rittenhouse Regency into residential condominiums by Hillier Architecture. Under the Secretary of the Interior Standards, the preference is for all the original 1,000 wood double hung windows to be replaced with a compatible unit or restored. But since the building is registered with the City of Philadelphia Historical Commission, explains James B. Garrison, AIA, Associate Principal, Hillier Architecture, the Philadelphia Historical Commission prefers to see windows from the second to the fifth floors either be replaced in kind or rehabilitated. For upper story windows, they will consider compatible units of a different material that also meet the Secretary's Standards.

In the world of practice, questions regarding restoration or replacement are not always argued over the condition and functions of the windows themselves. "The biggest issue we have to confront is clients or contractors who say they must be replaced, or there is no other option," says Skarmeas. "But past experience has indicated that there is rarely a case in which windows are beyond repair and cannot be repaired, restored, and reused. While the costs may be high, there are technology, products, and methods today that allow us to restore deteriorated windows without resorting to a replacement program. The costs may be higher is some cases, especially if there is severe deterioration."

One common argument for replacement is the payback gained through energy conservation resulting from the improved U-values (BTU loss per hour) of modern windows. When the U. S. General Services Administration (GSA) Center for Historic Buildings, Office of the Chief Architect, analyzes different upgrade approaches, a number of quantifiable variables are included, which must be balanced against standards of stewardship and saving taxpayer money. As a rule, cost analysis favors replacement in kind of simple double-hung wood windows, such as those in the Department of the Interior Headquarters, says Rolando Rivas-Camp, FAIA, Director (see Sidebar: How GSA Approaches Restoring or Replacing Historic Windows). Skarmeas reports that he has rarely found a window replacement program that gives fairly substantial paybacks.

"We do not recommend replacing original wood windows for any historic building if the original windows can be saved," says Michael Holleman, AIA, Director, Historic Preservation, VITETTA. But when the firm restored the historic landmark former Philadelphia Navy Yard Building 101 and adapted it for office reuse and its headquarters, replacement was the only option. Constructed in 1910 in the Renaissance Revival style, the building housed administrative offices for the Marine Corps and was the barracks for enlisted men.

All of the original windows had been replaced with aluminum-framed windows in the 1950's. In poor condition and poorly crafted, with a mill finish instead of a paint finish like the original wood windows, and a configuration which did not correspond to the original division of the sash with muntins, the windows significantly changed the appearance of the building's facades, giving the structure a lifeless appearance. In addition, the windows were single glazed and thermally inefficient.

> ***In the world of practice, questions regarding restoration or replacement are not always argued over the condition and functions of the windows themselves. The biggest issue we have to confront is clients or contractors who say 'they must be replaced,' or 'there is no other option.'***

Also being a reinvestment tax credit project, the three-story VITETTA Headquarters needed to meet the Secretary of the Interior Standards. Given that the value of the tax credits were significant relative to the added cost of replicating the original windows and, as the existing windows needed to be replaced, the question became one of finding the right window system. After looking at a fixed versus operable sash, the firm decided on fixed windows because they were more economical, more energy efficient with lower operating costs, and required less future maintenance.

Getting the divided light and double hung look right was a major issue. The final choice was insulated glazing with adhered wood muntin bars and aluminum spacers behind the bars. The profiles of the sash and muntins were manufactured to match the original architect's drawings, as none of the historic windows remained.

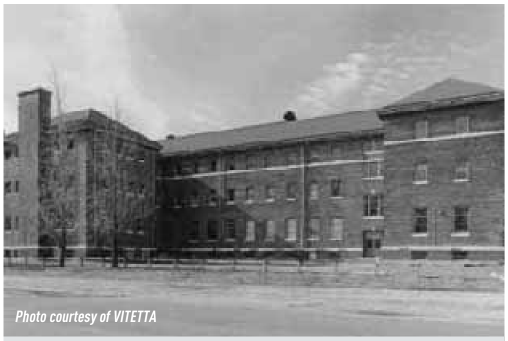


Photo courtesy of VITETTA

Main entrance, Navy Yard Building 101, Philadelphia, PA, before restoration

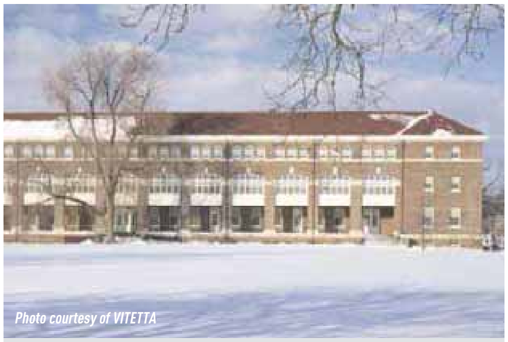


Photo courtesy of VITETTA

VITETTA Headquarters facing the parade ground, formerly Navy Yard Building 101, Philadelphia, PA, restored by VITETTA

Photo courtesy of VITETTA

Interior, Navy Yard Building 101, Philadelphia, PA before restoration

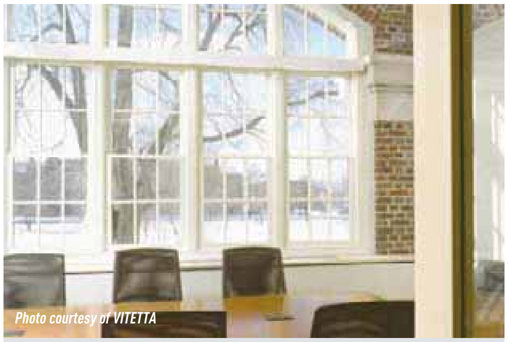


Photo courtesy of VITETTA

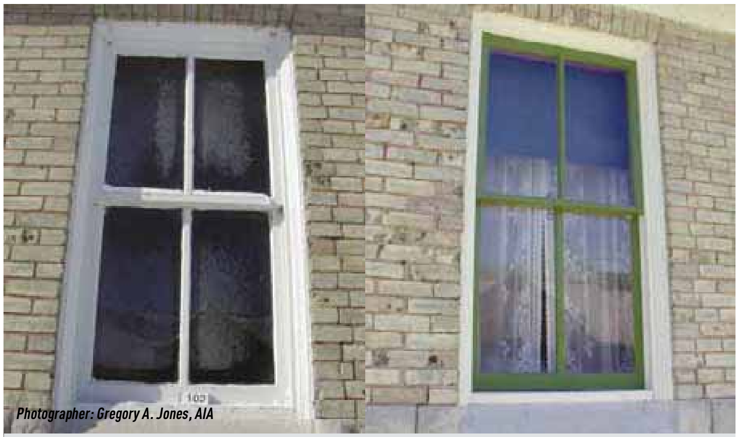
Restored interior, VITETTA Headquarters, formerly Navy Yard Building 101, Philadelphia, PA

Photographer: Gregory A. Jones, AIA

Old Mackinac Point Light Station in Mackinaw City, MI restored by the SmithGroup

Preserving History and Delivering Sustainability

In some cases, historical value overrides today's requirements for thermal efficiency. An example is the Old Mackinac Point Light Station in Mackinaw City, Michigan. Having earned historic preservation status by guiding ships sailing though the Great Lakes via the busy Straits of Mackinac from 1892 until 1958, when it was replaced by beacons atop the Mackinac Bridge, the Tudor-Revival building required restoration as a historic exhibit. The SmithGroup produced an historic structure report and managed the restoration. The upper and lower sashes of the single-pane windows were removed and fitted with modern brass-spring weather stripping, reports Gregory A. Jones, AIA, the SmithGroup's project manager. Nylon pile weather-stripping was added to the window, meeting rails and sash tops and bottoms. Paint was stripped and deteriorated portions of the wood exterior consolidated with epoxy, sanded, and repainted. In some cases, upper and lower sashes were replicated. Future plans include fabricating wood storm windows to replace the originals.


Photographer: Gregory A. Jones, AIA

Window before and after restoration by SmithGroup at Old Mackinac Point Light Station

Photo courtesy of Susan Maxman & Partners

The Motherhouse in Monroe, MI before restoration by Susan Maxman & Partners

For other restoration projects, sustainability is one of the primary goals, along with maintaining historical integrity. When the Sisters, Servants of the Immaculate Heart of Mary, an order of Sisters dedicated to eco-justice, hired Susan Maxman & Partners to prepare a master plan on how to best utilize their buildings and land in the future, they requested that all renovations and land uses adhere to the principles of sustainable design. The Sisters also wanted the renovation of their Motherhouse, a significant structure in southeast Michigan, to be a model of sustainable design by including improvement to the energy efficiency of the windows. After an extensive analysis, the choice was made to replace the majority of the sashes. (see Sidebar: The Motherhouse: Examining Sustainable Options for Restoration or Replacement). ■

The GSA Approach to Restoring or Replacing Historic Windows

The U.S. General Services Administration (GSA) is responsible for an inventory that includes over 400 historic buildings constructed between the early nineteenth and mid-twentieth centuries. Most were built during the 1930's, a period of high quality public building construction. Many retain original wood or steel windows that are character defining architectural features. In keeping with the Secretary of the Interior's Standards for Rehabilitation, GSA seeks repair and maintenance approaches that preserve original materials and design, repairing, and upgrading windows for functionality, energy efficiency, and improved security, as appropriate. For large and complex historic building projects, GSA often undertakes detailed analysis of alternative upgrade approaches to weigh cost, lifecycle, energy efficiency, functionality, and preservation tradeoffs.

This analysis guides GSA in balancing conflicting goals between setting a high standard for federal stewardship and reaching sound and cost effective decisions. Sometimes through this process, GSA architectural teams devise new solutions that achieve preservation goals at a savings to American taxpayers.

As a rule, GSA cost analysis has favored repair with replacement of irreparably damaged windows where the historic windows are large, multi-paned, and fabricated in steel or bronze. On the other hand, project-specific cost analysis has generally favored replacement in kind at buildings containing simple wood windows, such as the one-over-one double-hung windows at the Department of Interior (DOI) Headquarters Building.

For each project undertaken, GSA examines the arguments for repair or a combination of repair and in-kind replacement that offer the best value for GSA federal agency tenants, along with stewardship of the nation's public building legacy.

The Potomac Annex (Old Naval Observatory Campus) and the Department of the Interior Headquarters Building are both in Washington D.C., are listed on the National Register of Historic Places, and require review by the State Historic Preservation Officer for the District of Columbia under Section 106, National Historic Preservation Act (NHPA). Alterations must conform to the Secretary of the Interior's Standards for Rehabilitation, which give first preference to retaining and repairing original materials wherever possible. Necessary replacements, such as irreparably damaged windows, must match originals, including configuration, profile, dimensions, and detailing of sash muntins, mullions, meeting rails, jambs, and sills.

Potomac Annex (Old Naval Observatory Campus), Washington, D.C.

Constructed between 1843 and 1910, the site is a campus of small buildings. Specified work (not yet executed, as of 2005) is limited to repair of wood sash, repair and replacement of sash weights and cords, and caulking to improve weather-tightness. Estimated costs of repairing 438 windows in Building 2 (based on 1995 prices) are $122,041 ($279 per window)

Window retention advantages include:

- Lower lifecycle cost
- Preserving original materials, maintaining historic integrity, and original appearance.

Photo courtesy of HABS/Library of Congress

Potomac Annex (Old Naval Observatory Campus), Washington, D.C., Architect: James Melville Gillis

Department of the Interior Headquarters Building, Washington, D.C.

Photo courtesy of HABS/Library of Congress

Department of the Interior Headquarters Building, 1935, Washington, D.C., Architect: Waddy Wood

Constructed in 1935, the DOI Headquarters is a National Register-listed building in Washington's monumental core, near the National Mall. The building had 1,488 original wood double-hung, single glazed windows. New interior storm windows were installed for energy conservation and security (for blast resistance). The phased project combines repair and replacement in kind to reduce costs. Advantages of combined repair and in-kind replacement:

- Lower initial and life cycle cost than repair alone.
- Preserved original materials on main (E Street) facade, thus maintaining historic integrity.
- Replacement windows are located on a secondary façade.
- Original one over one, wood sash construction allows authentic replication.
- For future phases, the choice of repair versus replacement is to be determined, based on costs at time of construction.

Disadvantage: somewhat higher lifecycle, long term cost

CLICK FOR ADDITIONAL REQUIRED READING

The article continues online at ***archrecord.construction.com/resources/conteduc/archives/0601artistic-1.asp***. To receive AIA/CES credit, you are required to read this additional text. The quiz questions below include information from this online reading. To receive a faxed copy of the material, call (732) 726-9400, fax: (732) 726-9494 or email: info@artisticdoorsandwindows.com.

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LEARNING OBJECTIVES

After reading this article, you should be able to:

- *Analyze the choices between restoring and replacing old wood windows*
- *Describe the components and functions of old and replacement wood windows*
- *Examine design issues, options, alternatives, and recommendations for renovation of old wood windows*

INSTRUCTIONS

Refer to the learning objectives above. Complete the questions below. Go to the self report form on page 225. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self report form on *Record's* web site—*archrecord.construction.com*—to receive one AIA/CES Learning Unit including one hour of health, safety, welfare credit.

QUESTIONS

1. What is the function of muntins?
  a. To hold the window pane within a sash
  b. To serve as an integral part of the window casing.
  c. Protect the edge of the sill
  d. Holds the stiles of a window

2. According to the National Park Service windows are significant if they
  a. Are original
  b. Reflect the period or regional style of the building
  c. Have been replaced
  d. a and b above

3. The U value of a single pane of glass is:
  a. 2.5
  b. 1.5
  c. 1.0
  d. 0.5

4. The Secretary of the Interior's Standards for Rehabilitation recommends:
  a. Identifying the form and detailing of architectural features
  b. Replacing windows as a first choice
  c. Retaining and preserving architectural features
  d. a. and c. above.

5. All historic buildings being renovated must conform first to:
  a. The Secretary of the Interior's Standards
  b. Their original architectural plans
  c. Local landmark criteria
  d. State Historic Commission Office

6. GSA cost analyses have found that:
  a. Replacing wood windows is always advantageous.
  b. Wood windows are usually not cost effective to repair or restore
  c. Replacement in kind of simple double wood hung windows is a preferred choice
  d. Restoring simple double hung windows is always cost efficient

7. The usual tilt angle of Colonial sills is:
  a. 14 degrees
  b. 4 to 5 degrees
  c. 10 to 12 degrees
  d. 8 degrees

8. Older windows:
  a. Have minimal or no weather-stripping
  b. a. c. and d.
  c. Often are fitted with float or handblown glass.
  d. Usually contain layers of lead paint

9. Replacing old windows can:
  a. Improve thermal efficiency
  b. Damage casings and wallboards.
  c. Cost more than restoring them
  d. All of the above

10. Installing tinted glass on restored windows:
  a. Does not meet the Secretary of the Interior's Standards
  b. Should only be done to enhance thermal efficiency
  c. Can avoid the greenish tint of ordinary glass
  d. Should only be done if the whole window is replaced

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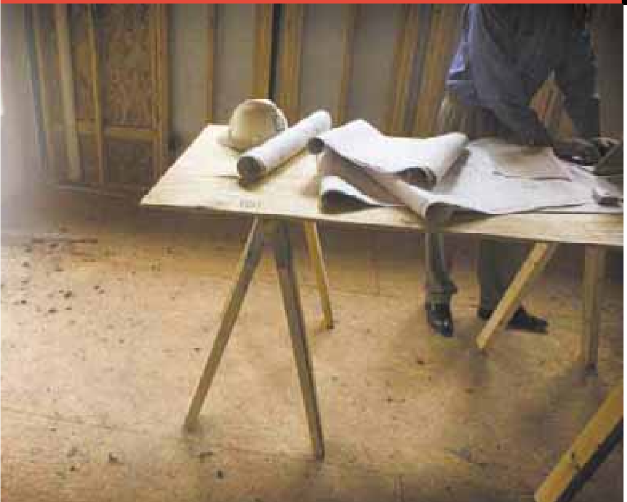

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016EDIT1

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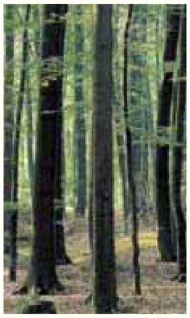

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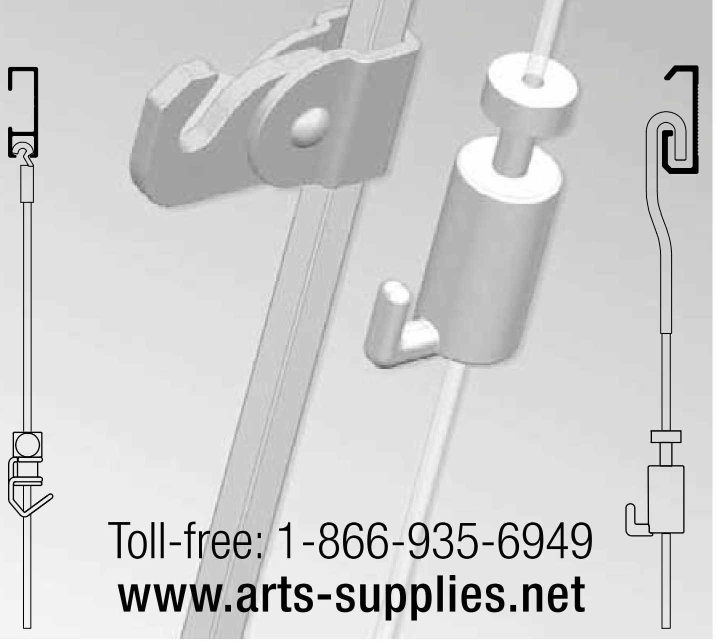

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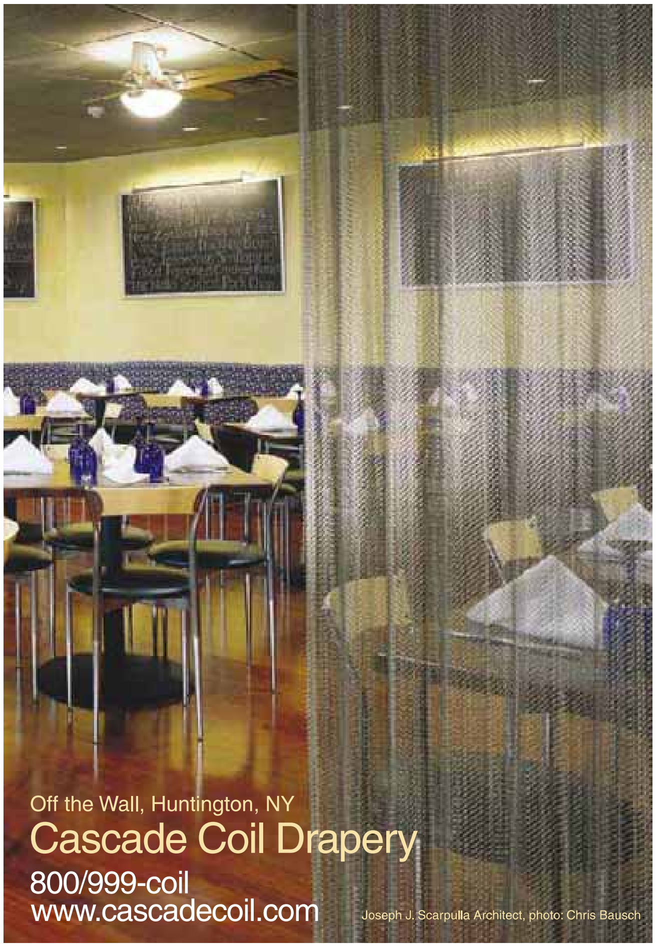

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exhibitions

LITRACON, SEEN IN LIQUID STONE. COURTESY LITRACON © GMBH

Liquid Stone: New Architecture in Concrete
through January 29, 2006

Jewish Washington: Scrapbook of an American Community
through January 8, 2006

Washington: Symbol & City
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Dates & Events

New & Upcoming Exhibitions

The Fashion of Architecture: Constructing the Architecture of Fashion
New York City
January 11–March 11, 2006
In this exhibition, visitors are encouraged to investigate the contemporary relationship between fashion and architecture. Studies in the congruencies between these two dynamic disciplines will provide a framework for understanding current trends in visual culture. *The Fashion of Architecture* coincides with Fashion Week and showcases projects by Yeohlee Teng, Hussein Chalayan, Shigeru Ban, and Zaha Hadid. At the Center for Architecture. Call 212-683-0023 or visit www.aiany.org for more information.

Open: New Designs for Public Space
Chicago
January 28–May 7, 2006
The idea of what public space in Chicago should be has continued to evolve from the city's earliest days, from the development of neighborhood streets and gardens to today's world-famous Millennium Park. This exhibition illustrates these changing concepts with more than 300 architectural renderings, photographs, and models that show how communal space has changed in the city. At the ArchiCenter. Call 312/922-3432 or visit www.architecture.org for additional information.

The HOME House Project: The Future of Affordable Housing
Atlanta
January 26–March 28, 2006
A multiyear traveling initiative created by the Southeastern Center for Contemporary Art (SECCA) in Winston-Salem, North Carolina. The first component of the project was a national design competition and exhibition that showcased innovative solutions for sustainable low-to-moderate-income-family housing proposed by more than 440 contest entrants from around the world. At the Museum of Design Atlanta. Call 404/688-2467 or visit www.museumofdesign.org for more information.

Symmetry
Los Angeles
January 26–May 7, 2006
In the world of space and time, symmetry derives its meaning from a center, a repetition of forms on mirroring sides of an axis. This exhibition features works by Los Angeles–based contemporary artists that use or relate to this concept. At the MAK Center for Art & Architecture L.A., at the Schindler House. Call 323/651-1510 or visit www.makcenter.org.

Ongoing Exhibitions

The Initiated Eye: Secrets, Symbols, Freemasonry, and the Architecture of Washington, D.C.
Washington, D.C.
Through December 31, 2005
An original exhibition focusing specifically on the significant contributions of Freemasons to the design and architecture of Washington, D.C. At the Octagon. Call 202/638-3221 or visit www.theoctagon.org.

Two Columbus Circle: Museum of Arts & Design and Allied Works Architecture
New York City
Through December 31, 2005
The first public viewing of the design for Museum of Arts & Design. This exhibition traces the conceptual development of the design by Brad Cloepfil of Allied Works Architecture and will include a detailed preview of the new facilities, which will anchor the southwestern corner of Central Park. At the Center for Architecture. Call 212/683-0023 or visit www.aiany.org.

Field Experiments in Art, Architecture, Landscape: Hombroich Spaceplacelab
New York City
Through December 31, 2005
Fourteen renowned architects and artists from around the world are currently creating an experimental development called Hombroich Spaceplacelab, a unique and daring merger of art, architecture, and landscape near Cologne, Germany. Each designer is individually responsible for one of the project's 40-acre lots. Each lot must have a ratio of 90 percent landscape to 10 percent building. Models, drawings, plans, and

photographs of the projects are on view at the Center for Architecture. Call 212/683-0023 or visit www.aiany.org.

Excavating Design: 18th-Century Drawings and Prints
New York City
Through January 8, 2006
Visitors can trace the origins of Western architectural design through drawings, prints, and sketches that evoke the majesty of the Roman ruins. In the Cooper-Hewitt's new 700-square-foot ground-floor gallery. For more information, call 212/849-8400 or visit www.ndm.si.edu.

Jewish Washington: Scrapbook of an American Community
Washington, D.C.
Through January 8, 2006
Scrapbooks, historic photographs, business ephemera, architectural artifacts, and other items convey the story of the local Jewish community as it grew along 7th Street into neighborhoods across the city. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

1945 Creativity and Crisis: Architecture and Design of the World War II Era
Chicago
Through January 8, 2006
Chicago architecture and design and their contributions to everyday life during the 1940s are subjects of this exhibition. Well-known architects and designers, such as Ludwig Mies van der Rohe, L. Morgan Yost, Bertrand Goldberg, Bruce Goff, Henry P. Glass, and Richard Ten Eyck, are featured in the exhibition. At the Art Institute of Chicago. Visit www.artic.edu/aic.

Prairie Skyscraper: Frank Lloyd Wright's Price Tower
Bartlesville, Okla.
Through January 15, 2006
An exhibition of approximately 108 drawings, models, photographs, documents, building components, and furnishings to mark the building's 50th anniversary. At the Price Tower Arts Center. For more information, call 918/336-4949 or visit www.pricetower.org.

Renewing Wright
Pittsburgh
Through January 15, 2006
This exhibition brings together two iconic buildings by Frank Lloyd Wright with, in each case, an associated project by a leading visionary architect of today. At the Heinz Architectural Center, Carnegie Museum of Art. Call 412/622-3131 or visit www.cmoa.org.

Design Innovations in Manufactured Housing
Chicago
Through January 15, 2006
Commissioned for this exhibition, the featured designs present creative solutions to fill the demand for affordable, high-quality housing. Eight nationally recognized architects and industrial designers—David Baker, Bryan Bell, Carol Brown, Teddy Cruz, Yolande Daniels, Doug Garofalo, David Khoury, and Ali Tayar—have contributed original models and drawings that consider innovation in the design, materials, and manufacturing techniques of low-cost, factory-built housing. At the Field Museum. For more information, call 312/922-9410 or visit www.fieldmuseum.org.

Designing the Taxi
New York City
Through January 15, 2006
This exhibition presents new concepts for New York's most iconic mode of transportation, the taxicab, as it approaches its centennial in 2007. Included are design firms Pentagram, Antenna Design, Birsel + Seck, IDEO, Ken Smith Landscape Architect, TRUCK, Imagination, Hybrid Product Design, and Blue Marlin. At Parsons The New School for Design. Call 212/229-8919 or visit www.parsons.edu/events.

Contemporary Chinese Architecture: Part One
London
Through January 17, 2006
China is currently undergoing rapid building and development and is fast becoming a dominant force in the future of architecture. This first display, in a two-part series, depicts these processes through a collection of spontaneous photographic impressions. At the Royal Academy. For additional information, call 020/7300-5839 or visit www.royalacademy.org.uk.

ReThink ReDesign ReCycle
Chicago
Through January 31, 2006
The ongoing exhibition *Competition: Public Process for Public Architecture Gallery* will be updated with the display of more than 100 entries for the competition to design on-street recycling bins created by members of the City of Chicago and the AIA Chicago Young Architects Forum. In CAF's CitySpace. Call 312-942-3432 or visit www.architecture.org.

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Dates & Events

in London, this exhibition features more than 300 objects from Great Britain, where the Arts and Crafts movement began, as well as America, Europe, and Japan. At the Indianapolis Museum of Art. For more information, visit www.ima-art.org or call 317/923-1331.

Transcending Type
New Haven
Through February 3, 2006
This exhibition was curated by the editors of ARCHITECTURAL RECORD for the 9th International Venice Architecture Biennale held in September 2004. To fit the Biennale's theme, *Metamorph*, alluding to landmark changes in architecture largely fueled by the digital revolution, the curators invited six inventive young architects to share their unique visions of characteristically American building types. At Yale School of Architecture gallery. Call 203/432-2288 or visit www.architecture.yale.edu.

Wine Architecture: The Winery Boom
Vienna
Through February 6, 2006
This exhibition presents the background and developments that led to the unique Austrian cultural phenomenon (which emerged in the 1980s) of combining wine with architecture. At Architekturzentrum Wien. Call 431/ 522-3115 or visit www.azw.at.

Santiago Calatrava: Sculpture into Architecture
New York City
Through March 5, 2006
Many forms of Calatrava's celebrated buildings originated in his independent works of art. This exhibition showcases his sculptures in marble and bronze, drawings, and architectural models, including work related to the new transportation hub he has designed for the World Trade Center site. This is the first exhibition in the U.S. to feature such a large selection of Calatrava's independent work and to examine it in conjunction with his architecture. At the Metropolitan Museum of Art. Call 212/535-7710 or visit www.metmuseum.org.

Chicago Architecture Foundation Tours
Chicago
Through March 2006
Led by trained volunteer docents, these acclaimed tours explore the architecture of the Chicagoland area via bus, boat, train, by walking, or Segway. For descriptions of all tours, visit www.architecture.org/tours.

ReThink/ReDesign/ReCycle
Chicago
The ongoing exhibition *Competition: Public Process for Public Architecture* will be updated with the display of more than 100 entries for the competition to design on-street recycling bins created by members of the City of Chicago and the AIA Chicago Young Architects Forum. At the CAF's CitySpace Gallery. Call 312/922-3432 or visit www.architecture.org.

Lectures, Conferences, and Symposia

Against Type
New Haven
January 12, 2006
In conjunction with the exhibition *Transcending Type*, Yale School of Architecture will host a panel discussion moderated by Suzanne Stephens, deputy editor of *Architectural Record*. In Hastings Hall, Yale School of Architecture. For more information, call 203/432-2288 or visit www.architecture.yale.edu.

Realizing Affordable Housing through Smart Growth
Washington, D.C.
January 12, 2006
Ralph Bennett, president of Bennett Frank McCarthy Architects and architecture professor at the University of Maryland, will discuss five keys for achieving affordable housing through smart growth. He will consider the current housing boom and offer solutions that are inextricably linked to land use policy. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

CityVision: Young Designers Envision Future D.C. Neighborhoods
Washington, D.C.
January 13, 2006
District of Columbia middle school students who participated in the CityVision Fall 2005 Program will present their ideas for improving the Navy Yard, Potomac Avenue, and Capital Hill extended neighborhoods. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

Symposium: Greening Roofs
Washington, D.C.
January 17, 2006
In the U.S., green roofs are a rapidly emerging technology of sustainable architecture and best management practices. Benefits of green, or vegetated, roofs include reducing storm-water runoff and urban heat islands while lowering a

building's energy requirements. Michael Perry, with Building Logics and Dawn Gifford with D.C. Greenworks will discuss the applicability and benefits of this technology, the elements of green roof systems, and examine the growing trend in the United States toward green roofs. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

Davis Brody Bond/Max Bond
Washington, D.C.
January 23, 2006
In July 2004, the architecture firm Davis Brody Bond was selected to complete the overall plans for "Reflecting Absence," the World Trade Center Memorial in New York City designed by Michael Arad, AIA, and Peter Walker, FASLA. A founding principal of the New York–based firm, J. Max Bond, Jr., FAIA, will discuss this central piece of the WTC site as well as his firm's other notable projects, including Atlanta's Martin Luther King, Jr., Center for Nonviolent Social Change, and the Birmingham Civil Rights Institute. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

Craig Dykers/Snøhetta
Washington, D.C.
January 25, 2006
The buildings of Snøhetta are smoothly integrated into the landscape through the innovative use of materials and forms. Craig Dykers, a founding principal of the Norwegian-based studio, will discuss some of the firm's internationally acclaimed projects, including the Bibliotheca Alexandrina in Alexandria, Egypt; the Turner Contemporary in Margate, England; and the National Opera House in Oslo. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

GSA Federal Building Tour
Washington, D.C.
January 28, 2006
A major federal building designed by architect Moshe Safdie is currently under construction in the NOMA (North of Massachusetts Avenue) neighborhood of Washington. The agency headquarters includes a six-story, crescent-shaped wing and two rectilinear, eight-story wings connected by an atrium. Jean Hundley, project manager with the General Services Administration, will lead a tour of this 422,000-square-foot project. Call the National Building Museum at 202/272-2448 or visit www.nbm.org.

Competitions

2006 Barrier-Free America Award
Washington, D.C.
Deadline: January 13, 2006
The Paralyzed Veterans of America (PVA), a national veterans' service and disability rights organization, has issued a call for nominations recognizing contributions to accessible design. Each year, PVA honors an individual with this national award for his or her sensitivity to the importance of accessible design, as well as the difference he or she has made through a particular project in achieving a barrier-free environment. Visit www.pva.org.

Design Ideas Competition
Deadline: January 16
A design ideas competition for a landmark building, expected to achieve a prominent height ranging between 50 and 60 floors, is part of the fourth phase of the Absolute development in the City of Mississauga, the second-largest city in the Greater Toronto area. The competition is intended to further develop the urban planning vision of the Mississauga City Center. The objective is to create an ensemble of high-quality buildings that contribute to the ongoing evolution of the Mississauga City Center, and the establishment of a strong residential neighborhood. Visit www.yourabsolute.com for more information.

Dedalo Minosse International Award Competition
Registration Deadline: January 27, 2006
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client. Work must have been completed by a professional architect or building engineer. Also, special sections have been added—one focusing on Italian architecture and the other on clients who have hired young architects under 40. Visit www.assoarchitetti.it.

Ceramic Tiles of Italy Design Competition
Deadline: January 30, 2006
This annual awards program recognizes design excellence in projects that feature Italian ceramic tile. North American architects and interior designers are invited to submit residential, commercial, and institutional projects. Entries may be submitted for domestic and international new construction and renovation projects. Visit www.italiantiles.com.

2006 Annual James Beard Foundation Awards
Deadline: January 31, 2006
The James Beard Foundation Awards recognize outstanding achievement within the fine food and beverage industry. Open to architects/designers in North America for restaurant projects since 2003. For further information, visit www.jamesbeard.org.

2006 Spectrum Awards
Deadline: February 3, 2006
Architects, designers, builders, contractors, distributors, retailers, installers, and other professionals from around the world will be vying for the chance to win a $10,000 Grand Prize in the 2006 Spectrum Awards presented by Coverings, the largest and most comprehensive annual marketplace for tile and stone. The competition, which draws installations representing excellence in the use of ceramic tile, seeks residential and commercial projects. To be considered, projects must have been completed within the timeframe of January 2003–December 2005. Call 703/683-8500 or visit www.coverings.com.

ASLA 2006 Awards
Deadline: February 10, 2006
Each year, the ASLA awards program honors the best in landscape architecture from around the globe, while the student awards program provides a glimpse into the future of the profession. The awards program is divided into five categories: General Design; Residential Design; Analysis and Planning; Research; and Communications. The call for entries also includes the Landmark Award, recognizing a landscape architecture project completed between 15 and 50 years ago. The student awards program also features a Student Collaboration category and a Student Community Service Award. Visit www.asla.org for more information.

The Architectural League of New York 2005–2006 Young Architects Forum
Deadline: February 10, 2006
Open to architects and designers no more than 10 years out of undergraduate or graduate school. Winners will receive a cash prize, exhibit their work, and present lectures during April and May at the League in New York City. For information, call 212/753-1722 or visit www.archleague.org.

International VELUX Award 2006
Registration Deadline: February 10, 2006
Submission Deadline: May 5, 2006
Open to students of architecture, the award celebrates and promotes excellence in completed study works and acknowledges students as well as their tutors. The overall award theme is “Light of Tomorrow,” reflecting a wish to explore and discuss the role of daylight in architecture. Daylight and sunlight are important factors in how buildings

Hurricane Season couldn’t blow our house in!
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are perceived and in the daily lives of people, their health and comfort, at home or at work. Visit www.velux.com/a.

4 Corners Design Competition
Registration Deadline: February 24, 2006
Submission Deadline: March 1, 2006
Submit a design for a pedestrian connectivity in downtown Naples, Florida. In addition to the jury's judging process, community members will vote for the "People's Choice Award." More information is available at www.aiaflasw.org.

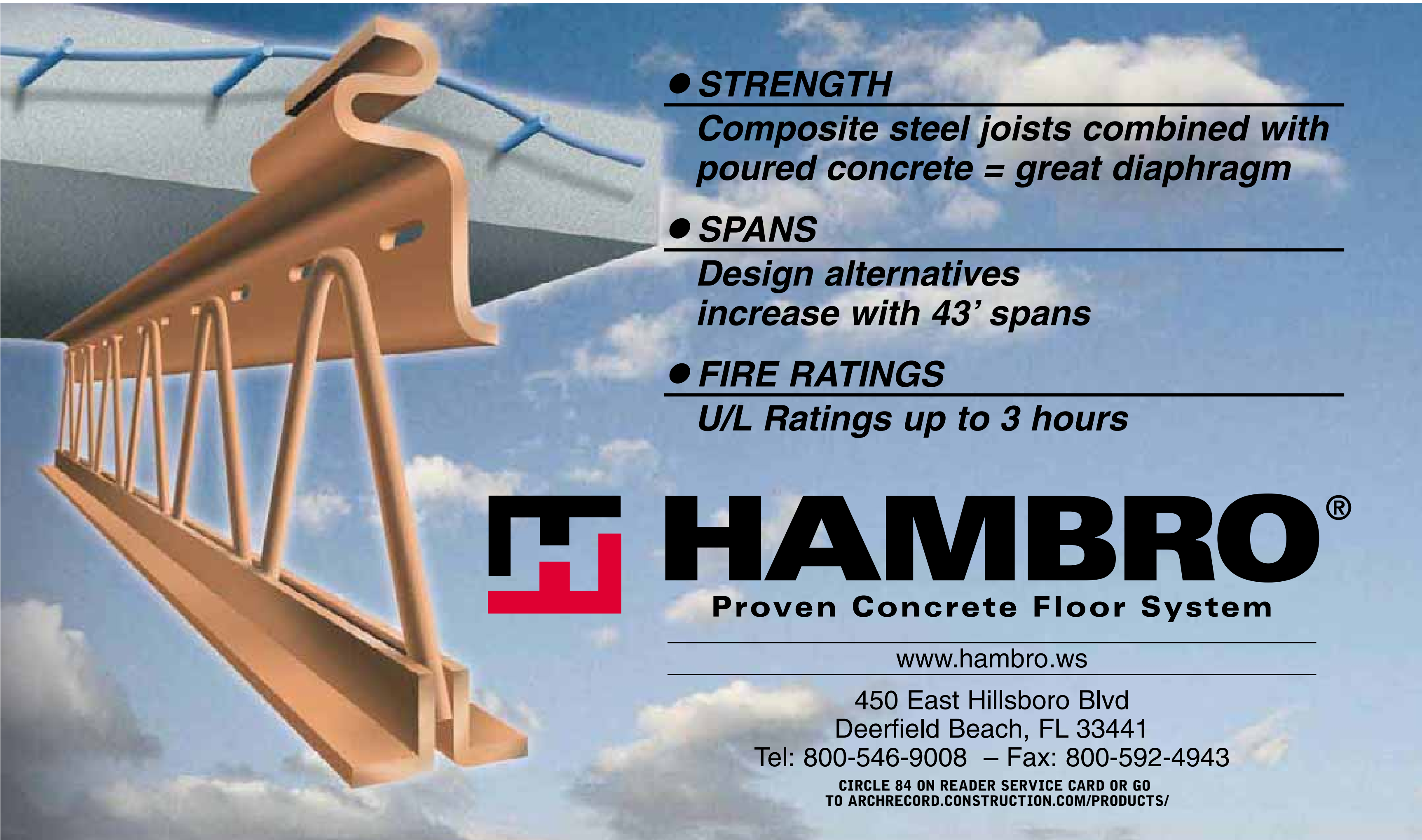
Inside:Out—Weaving Arts into the Urban Fabric
Registration Deadline: February 27, 2006
The Boston Center for the Arts is sponsoring a two-stage, national open design competition for its public open spaces in Boston's South End neighborhood. Set at the crossroads of widely divergent social groups and communities, the Boston Center for the Arts' campus includes theaters, art galleries, artist studios, the Boston Ballet, restaurants, residences, and the iconic Cyclorama in a tightly knit urban block that connects its many publics through the performing and visual arts. The competition seeks innovative ways to spatialize the BCA's mission by bringing the inside out and by weaving arts into the urban and social fabric of this Boston neighborhood. Visit www.architects.org.

New Life for the Big Easy New Orleans
Deadline: March 1, 2006
An international competition for new housing in New Orleans in the wake of Hurricane Katrina's devastation to the Crescent City. Participants in the competition will design housing for an actual block in the city. Programmatic elements include single-family housing, multi-family housing, and mixed-use urban planning. For further information about the competition, visit www.architecturalrecord.com.

10th Biennial Bridge Awards Competition
Deadline: March 31, 2006
Portland Cement Association (PCA) is seeking nominations for its tenth biennial Bridge Awards Competition. The program, co-sponsored by *Roads & Bridges* magazine, recognizes excellence in design and construction of concrete bridges. All types of bridges—highway, railway, pedestrian—in which the basic structural system is concrete are eligible. Entries are encouraged for cast-in-place or precast concrete bridges with short, medium, or long spans. Newly constructed, reconstructed, or widened structures qualify for the competition. Call 847/972-9100 or visit www.cement.org for more information.

Edge as Center: Envisioning the Post-Industrial Landscape
Registration Deadline: March 31, 2006
The Boston Society of Architects (BSA) announced recently that the city of Somerville, Massachusetts, will join with the BSA to hold an international urban design ideas competition for the industrial Brickbottom area in East Somerville. A competition prize fund of $35,000 will be awarded to the top three entrants at the discretion of the seven-member jury. In addition, the winner will be given the opportunity to collaborate with the Mayor's Office of Strategic Planning and Community Development on planning and development activities in the area. For details, visit www.architects.org/somerville.

E-mail event and competition information two months before event or submission deadline to elisabeth_broome@mcgraw-hill.com.



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Tel: 800-546-9008 – Fax: 800-592-4943

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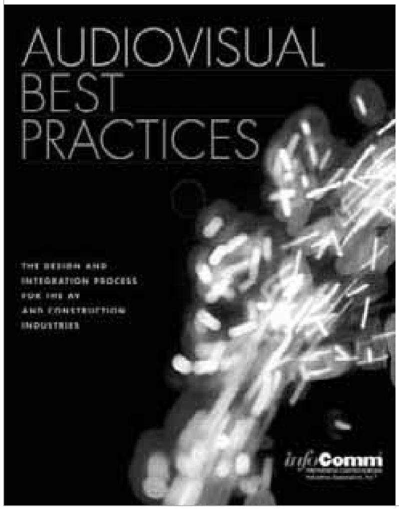
Must-Read Book for Architects

1 General data


AUDIOVISUAL
BEST
PRACTICES
THE DESIGN AND INTEGRATION PROCESS FOR THE AV AND CONSTRUCTION INDUSTRIES
infoComm

InfoComm International

First printing sold out. Now in second printing, Audiovisual Best Practices: The Design and Integration Process for the AV and Construction Industries is a complete resource for architects, which explains everything about the AV design and installation process. Softcover. 214 pgs. $64.50. To look inside or oder, go to their web site. Published by InfoComm International, the trade association to the professional AV industry.

800-659-7469
www.infocomm.org

| Circle Reader Service #150

Italian Terra Cotta

2 Site construction

Tuscan Imports, Inc.

Tuscan Imports, Inc. is an importer of the finest hand made Italian terra cotta planters, urns, fountains, and statuary suitable for residential or commercial applications. Exceptional detail, extensive inventory, and custom work available. Guaranteed for life against frost.

843-667-9101
www.tuscanimports.com

| Circle Reader Service #153

Residential CAD Software

1 General data

3D by: Marcus Bell & Associates
Newly Released v13
SOFTPLAN
Version 13
Version 13
SOFTPLAN
ARCHITECTURAL DESIGN SOFTWARE

SoftPlan Architectural Design Software

SoftPlan is one of the industry's leading residential CAD software packages. Now on its 13th release, SoftPlan allows users to create house plans in a fraction of the time taken to draw by hand or using a conventional CAD package. SoftPlan is ideal for architects and designers looking to decrease drawing and revision time while increasing accuracy and productivity. Using the latest technology, SoftPlan gives you the flexibility to create complex, custom drawings with speed, accuracy, and ease. Quickly and easily create floor plans, elevations, cross-sections, photo-realistic 3D renderings, material lists, and more! Visit their web site.

800-248-0164
www.softplan.com

| Circle Reader Service #151

Terrazzo & Concrete

3 Concrete

DEX STUDIOS
CONCRETE & TERRAZZO

DEX Studios

DEX manufacturers precast architectural concrete and terrazzo products for commercial, multi-unit, and residential applications. Superior finishes and colors in both cast concrete and terrazzo are available in sinks, bathtubs, shower pans, tile, bar and countertops, tabletops, fireplaces, and tilt-up wall panels. All DEX products are pre-cast in a controlled environment, polished to a hard dense finish, and sealed to enhance depth and protect the finished product. Sample boards of 25 spectacular concrete colors and 10 standard terrazzo finishes available. DEX has a combined total of 50 designs and sizes of sinks.

404-753-0600
www.dexstudios.com

| Circle Reader Service #154

Commercial Grade Outdoor Furniture

2 Site construction

Modern Outdoor

High style, clean-lined simplicity, short lead times, environmentally conscious materials—these are the attributes of Modern Outdoor—a producer of top quality outdoor furniture with a definitive modern aesthetic. The Modern Outdoor Collections are commercial grade products designed for the restaurant, hospitality, and resort industries, with an aesthetic that is perfect for a residential client's backyard setting. The entirety of the Collection is made from Ipe, Electropolished Stainless Steel and Natural Composite materials. Modern Outdoor offers attractive pricing.

818-838-7060
www.modernoutdoor.com

| Circle Reader Service #152

Metal-Edge Concrete Plank

3 Concrete

MidCon Products, Inc.

MidCon's 2-in. Metal-Edge Tongue and Groove Plank is a lightweight (12 psf) precast concrete plank produced in a standard 1-ft.-6-in. by 10-ft. by 2-in. size with a cold-rolled 22-ga. galvanized metal edging. The lightweight characteristics (180-lb.-per-plank) make handling and installation easy. Support spacing can vary, providing for multiple span schemes. Interlocking edges need not end on supports. Ideal for retrofit work, mezzanines, and new floors within existing structures.

920-779-4032
www.midconproducts.com

| Circle Reader Service #155

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Underslab Vapor Retarder

3 Concrete

Control Moisture Migration
VaporBlock®
UNDERSLAB VAPOR RETARDER
RAVEN INDUSTRIES

Raven Industries, Inc.

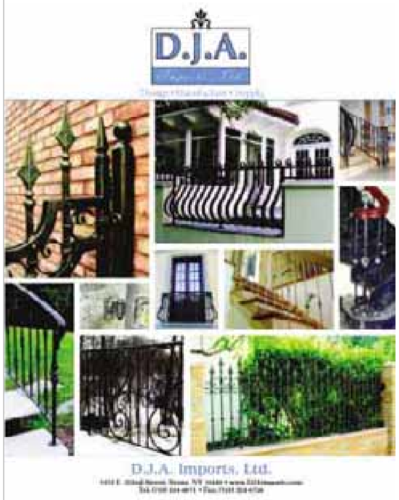
Raven leads the industry with the introduction of Vapor Block® underslab vapor retarder. Vapor Block VB6, VB10, and VB15 are high performance underslab vapor retarders designed to retard moisture migration through concrete slabs. Vapor Block is made from state-of-the-art polyethylene resins that provide superior physical and performance properties that exceed ASTM E-1745 (Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs) Class A, B, and C requirements.

800-635-3456
www.vaporblock.com

| Circle Reader Service #156

Ornamental Metals

5 Metals



D.J.A. Imports, Ltd.

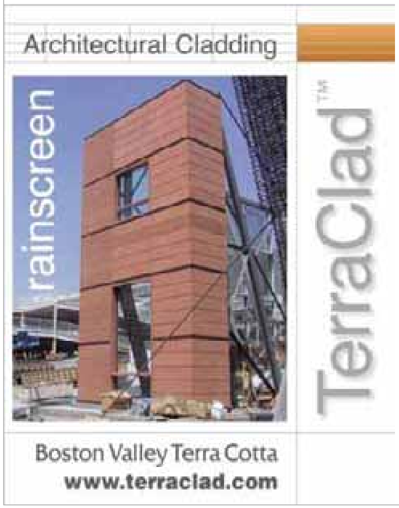
With over 30 years of fabrication experience, D.J.A. has evolved into a full service distributor specializing in ferrous and non-ferrous metals such as ornamental steel, aluminum, stainless steel, and brass. Furthermore, they have gate and door hardware in solid steel and stainless, furniture, commercial furnishings, and machinery. From their office and warehouse in NY, they serve the entire U.S., Canada, Puerto Rico, and the Caribbean. They are unmatched in customer service, offering endless customization options for a successful project.

718-324-6871
www.djaimports.com

| Circle Reader Service #159

Architectural Cladding System

4 Masonry



Boston Valley Terra Cotta Inc

A "green" architectural cladding system delivering the advantages of rain screen performance while retaining the beauty and richness of terra-cotta. Terraclad is a fired ceramic material produced in the U.S.A. in Boston Valley Terra Cotta Company's state of the art facilities in Orchard Park, NY. Available in colors, sizes and patterns to match the designer's imagination.

888-214-3655
www.bostonvalley.com

| Circle Reader Service #157

Decorative Thermoplastic Panels

6 Wood & plastics

Acoustic Ceiling Products

ACP's Classic Style Panels are made of a composite thermoplastic fire-retardant material with embossed designs and thermally infused color finishes ranging from Bermuda Bronze to Welsh Cherry. They offer a design selection that includes many popular traditional styles and contemporary standards. All designs are available for various ceiling applications and several have options to be used for walls, wainscoting and kitchen backsplash. The design options and finish combinations are virtually endless.

800-434-3750
www.acpideas.com

| Circle Reader Service #160

Thin Stone Cladding Systems

4 Masonry

red door spa

Stone Truss Systems, Inc.

Thin lightweight natural stone wall cladding by THIN STONE SYSTEMS, LLC offers economical solutions for new construction and renovation, for both exterior and interior. Reinforced by a special patented process, the thin veneer panels of natural granite, marble, or limestone are applied to a structural framing system of extruded aluminum. Weighing only 6-lb. psf, the wall system provides many advantages including speed and simplicity of installation.

212-838-7667
www.thinstonesystems.com

| Circle Reader Service #158

Columns, Balustrades, Cornices & Mouldings

6 Wood & plastics

Melton Classics, Inc.

Melton Classics provides the most comprehensive selection of quality architectural products in the industry, including architectural columns, balustrades, mouldings, cornices, and a wide array of architectural elements. Columns come plain or fluted, load-bearing or column covers, round or square in fiberglass, fiberglass/marble composite, synthetic stone, cast stone, GFRC, and wood for paint or stain. Their maintenance-free balustrade product is ideal for any application and available in four durable maintenance-free materials: MarbleTex™ synthetic stone, high density polyurethane, cast stone and polyvinyl.

www.meltonclassics.com

| Circle Reader Service #161

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Composite Porch Planking

6 Wood & plastics

Tendura, LLC

TenduraPlank composite tongue-and-groove porch flooring is made of 40% plastic and 60% waste wood fiber and is available in two product lines. TenduraPlank Classic is factory primed and ready to be top coated with any quality exterior latex or oil-base porch paint. TenduraPlank Solids Collection is color-through and requires no painting. Guaranteed for as long as you own your home, TenduraPlank brings the elegant warmth of the traditional wood front porch back for good.

800-TENDURA (836-3872)
www.tendura.com
IBS Booth #W3491

| Circle Reader Service #162

Architectural Sheetmetal Products

7 Thermal & moisture protection

CopperCraft

CopperCraft manufactures a complete line of high-quality architectural sheetmetal products including ornamental dormers, roof vents, roof drainage products, conductor heads, steeples, cupolas, and spires, as well as items which are custom built to your specifications. Design, engineering, testing, and fabrication methods that meet stringent structural and performance standards make the difference. You get unsurpassed quality, delivery, and custom service including a nationwide network of representatives.

800-486-2723
www.coppercraft.com

| Circle Reader Service #165

Pad-Style Snow Guards

7 Thermal & moisture protection

Alpine SnowGuards

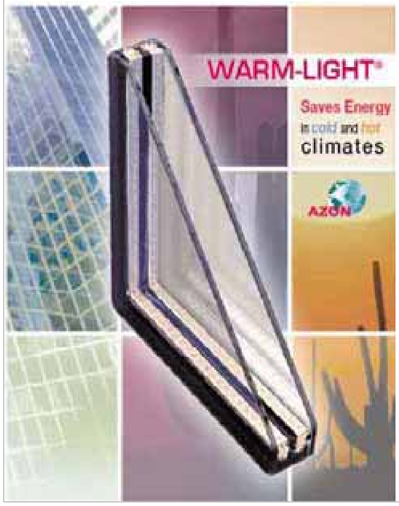
Alpine SnowGuards manufactures over 60 styles of snow retention devices. Pictured are their new SnowCatcher™ traditional pad-style snow guards, available in copper, zinc, lead-coated copper, Kynar-painted aluminum, Galvalume, and other metals. Alpine makes snow guards for just about any roof. Fax number 888-766-9994 Email info@alpinesnowguards.com

888-766-4273
www.alpinesnowguards.com

| Circle Reader Service #163

Extreme Performance Commercial Insulated Glass

8 Doors & windows



AZON USA Inc.

Warm-Light® spacer from Azon creates a warm-edge glass unit that reduces thermal conductivity in any climatic condition. The result is a dramatic reduction in condensation on the glass surface in cool climates and less heat transfer in warm climates, as well as lower utility costs and a more comfortable interior environment. The polyurethane core in Warm-Light spacer is 100 times less conductive than stainless steel or conventional aluminum spacer. Also enables design flexibility for a variety of building types, window sizes and styles, with standard and custom colors.

800-788-5942
www.warmedge.com

| Circle Reader Service #166

Cedar Roofing & Sidewall

7 Thermal & moisture protection

Photo: Courtesy Victor International Corporation
Architect: Alexander Bogaerts & Associates

Cedar Shake & Shingle Bureau

The Cedar Shake & Shingle Bureau provides installation instructions and AIA Continuing Education Seminars. Member manufacturers produce Certi-label™ brand cedar shakes and shingles for roofing and sidewall applications. To ensure quality, independent third party inspections are conducted, plus quality assurance by the CSSB Cedar Quality Auditor. Certi-label brand products are a renewable resource, durable, impact- and wind-resistant, and available with either pressure-impregnated preservative or fire retardant treatment, in either prestained or pre-primed finishes.

604-820-7700
www.cedarbureau.org

| Circle Reader Service #164

Swing Doors

8 Doors & windows

Eliason Corp.

Eliason Easy Swing® Doors are manufactured for use in supermarkets, restaurants, drug stores, specialty stores, department stores, food service and walk-in coolers. Choose from a variety of colors and options. The HCP-10 is built to take the punishment from motorized equipment and pallet jacks. Custom manufactured to meet your specifications. Buy direct. Specify with confidence.

800-828-3655
www.eliasoncorp.com

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Light Diffusing Glass

8 Doors & windows

Goldray

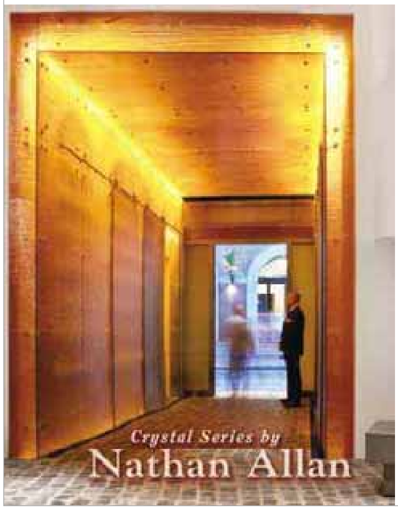
Goldray's Satin Etch glass is a translucent clear glass with a light diffusing etched surface to which patterns may be applied. Satin Etch Glass diffuses light to provide privacy while still allowing high light transmission. The surface is easy to clean and has a high resistance to stains. This product can also be overlaid with graphics viewable from both sides. Visit Goldray's web site for more information on this and other innovative products.

800-640-3709
www.goldrayindustries.com

| Circle Reader Service #168

Glass Tunnel Project

8 Doors & windows



Nathan Allan Glass Studios, Inc.

For this project, 1/2-in. thick Crystal Series Cognac Glass was installed in Fendi's home office in Rome, Italy. The glass was pinned to the walls and fitted with Dorma Hardware's sliding systems for the entry and exit to this elaborate glass tunnel. All vertical panels are tempered, and ceiling panels are both tempered and laminated. This project was produced for Fendi and designed by Peter Marino Architects in New York City.

604-277-8533
www.nathanallan.com

| Circle Reader Service #171

Curved Translucent FRP Panel Systems

8 Doors & windows

MAJOR INDUSTRIES
GUARDIAN 275® TRANSLUCENT DAYLIGHTING

Major Industries

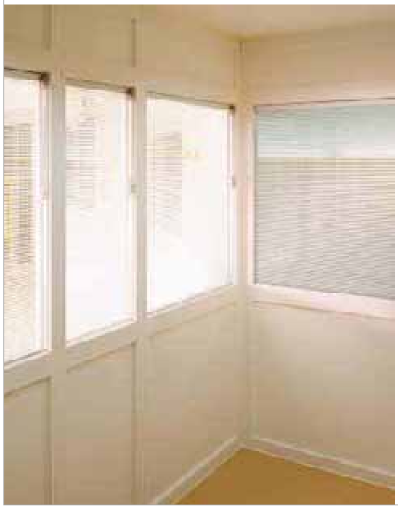
When your daylighting project demands something special, the TransCURVE™ translucent building panel system provides exceptional performance, with the added benefit of a striking, unique appearance. TransCURVE™ glazing panels feature a visually attractive aluminum grid core in several popular patterns giving panels a refined look while maintaining exceptional strength. TransCURVE™ also features a premium architectural-grade FRP exterior skin that blocks damaging UV rays while transmitting the beauty of natural light.

715-842-4616
www.majorskylights.com

| Circle Reader Service #169

Fire-Rated Glass with Internal Blinds

8 Doors & windows



Pilkington North America - Fire Protection Glass

Now you can have fire-rated glass with internal blinds. Long available in Europe, now available in North America, Pilkington Pyrostop is UL approved and listed for your 45 or 60 minute applications. Contact Technical Glass Products at for additional information.

800-426-0279
www.pilkington.com/fire

| Circle Reader Service #172

High-Performance Windows

8 Doors & windows

Marvin Windows and Doors

Bring the outside in with the new Ultimate Double Hung Magnum from Marvin Windows and Doors. The Ultimate Double Hung Magnum is an easy-to-operate, high-performance wood or clad-wood window available in very large sizes—a great solution for customers who require historically compliant windows that can meet commercial-level performance.

888-537-8266
www.marvin.com

| Circle Reader Service #170

Door Hardware Products

8 Doors & windows

New Restoration Hardware

Richards-Wilcox

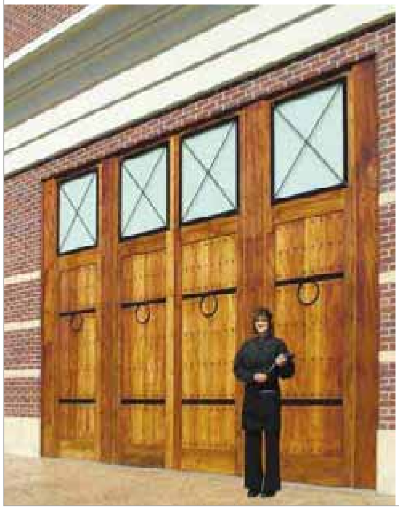
Richards-Wilcox manufactures a line of specialty door hardware products for the antique reproduction market circa 1880 through 1950. With over 25 different types of decorative hinges, hinge straps, cast iron handrail brackets, and antique flat track, and hangers, Richards-Wilcox supplies many choices for swinging, hanging, and bi-fold door hardware in traditional building or historic applications such as coach houses, garages, roundhouses, barns and stables. For more information call Richards-Wilcox or visit their web site.

800-877-8456
www.rwhardware.com

| Circle Reader Service #173

Custom Wood Doors

8 Doors & windows



SUN-DOR-CO

These giant 14-ft.-tall Spanish Cedar panels with distressed wrought iron were designed by an architect and built by SUN-DOR-CO to add maximum elegance to an upscale restaurant. Six sets of these panels were incorporated into the building along with custom front-entry doors with the restaurant's logo etched into glass panels. This is just another example of SUN-DOR-CO's 50 years of expertise in building custom doors. You design it … they'll build it. And, they'll do it in less than 60 days.

800-835-0190
www.sundorco.com

| Circle Reader Service #174

Resilient Athletic Flooring

9 Finishes

Abacus Sports Installations

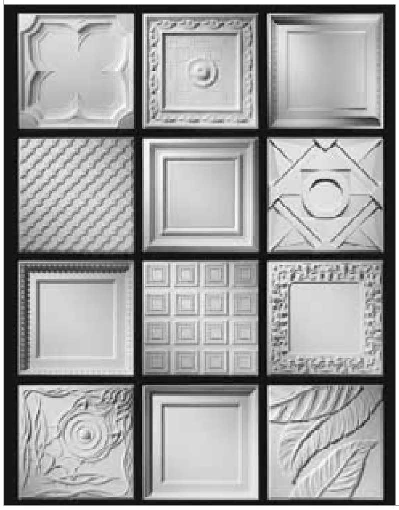
Abacus Sports Installations is proud to offer PADENPOR. PADENPOR resilient flooring is designed for multipurpose use, including all sports activities, dances, meetings, roller blading, etc. PADENPOR is a "dual durometer" multipurpose floor. Two products (rubber basemat and urethane) are combined to introduce two different hardnesses to the floor. The rubber underlayment (LEED and Green certified) is soft, offering resilience/ergonomics/safety. The urethanes are hard, offering not only performance (ball rebound/playability) but also durability.

800-821-4557
www.abacussports.com

| Circle Reader Service #175

Ornamental Plaster Ceiling Tiles

9 Finishes



Above View Mfg., By Tiles, Inc.

Above View ornamental plaster ceiling tiles are fabricated from a non-toxic, non-combustible, proprietary composition. They drop into any standard 15/16-in. T-Bar grid system. There are more than 50 standard designs, custom design work, and 1,300 custom colors and faux finishes available upon request.

414-744-7118
www.aboveview.com

| Circle Reader Service #176

Reduce Sound Transmission

9 Finishes

Acoustiblok®

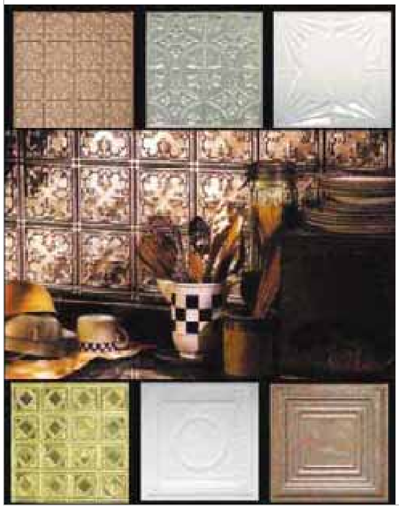
Acoustiblok®: An easy and economical product to reduce sound transmission. Amazing sound reduction, up to an STC of 66 using standard construction. So revolutionary it was awarded 1st place by the British House of Commons for Britain's Noise Abatement Society Competition. Easy to install, 1/8-in.-thick, cuts with box knife, can be nailed, stapled, or glued. No Construction changes, less cost than other methods. UL approved for commercial building, made in USA.

813-980-1400
www.acoustiblok.com

| Circle Reader Service #177

Plastic Ceiling Panels & Backsplashes

9 Finishes



Architectural Products by Outwater, LLC

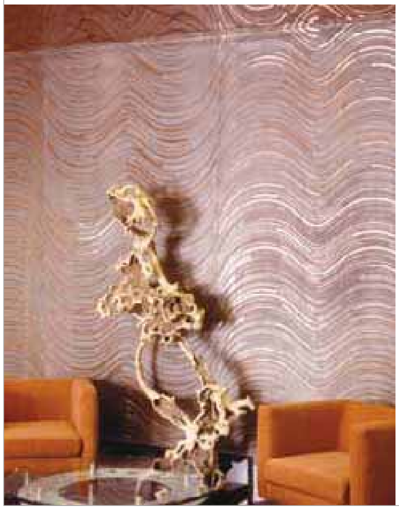
Offered at a fraction of the cost of its stainless steel counterparts, Outwater's new selection of highly detailed Class-A Fire Retardant Plastic Ceiling Panels and Backsplashes not only enable a perfect, professional installation by anyone without any necessary previous experience, they are available in a variety of different traditional and contemporary finishes to accommodate any décor. Easy to cut for customized fabrication, they are waterproof and mildew-resistant as well as germ- and bacteria-free.

800-835-4400
www.outwater.com

| Circle Reader Service #178

Cast Metal Wall Surfacing

9 Finishes



Gage Corporation

Gagecast® is a cast metal wall surfacing material suitable for a variety of interior architectural applications where patterns that feature high luster, relief, durability, and cost effective installation are a requirement. Twenty-eight designs are standard, however, custom collaboration is encouraged. Gagecast® is one component of Gage Vertical Surfacing. Contact the factory for product literature and selected samples.

800-786-4243
www.gageverticalsurfacing.com

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Perforated Metal Ceilings

9 Finishes

Gage Corporation

Setting a new standard for perforated metal ceilings, Gage introduces the 700 Series of perforated metal ceilings manufactured from 50% recycled aluminum. Standard designs include five distinctive finishes and 14 different perforation patterns. Select and custom designs are also available. Contact the Gage factory for literature and samples.

800-786-4243
www.gageceilings.com

| Circle Reader Service #180

Porcelain Stone

9 Finishes

Viva Ceramica

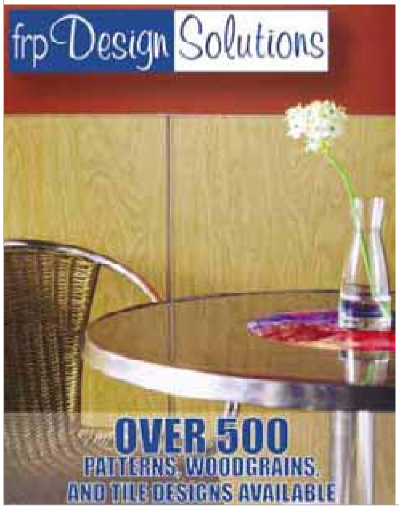
Viva has added to their philosophy the idea of not weighing down this world with useless products, copies of things that have already been seen, interchangeable repetitions of objects that are born today and die out with fashion. IRIDIUM is created to be exclusive, for those who understand and know how to appreciate the value of things that last and the work and passion that is part and parcel of their ceramic workshop. A metallic glaze with iridescent tones creates an absolutely new type of surface. Ideal for homes, offices, shops, and public venues.

www.cerviva.it

| Circle Reader Service #183

Decorative Wall Panels

9 Finishes



Kemlite Company

frpDesign Solutions is a family of decorative wall panels that provides an alternative to traditional wall coverings such as ceramic tile, wood paneling or vinyl wall coverings. Offering both functionality and design, products in the frpDesign Solutions line are made of a moisture-resistant frp panel with a decorative finish that includes myriad colors, patterns, and woodgrains, as well as a tile-look panel. Available with over 500 hundred choices, frpDesign Solutions is easy to install and maintain. For more information, visit Kemlite on the web.

888-332-6377
www.frpdesignsolutions.com

| Circle Reader Service #181

Custom Bronze Plaques

10 Specialties

WINCHESTER
COUNTRY
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Custom Home Accessories, Inc.

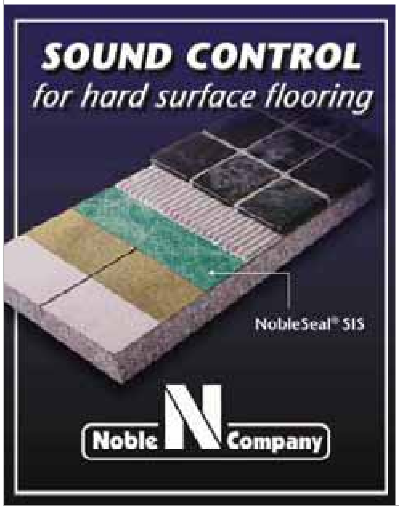
Bronze plaques are used to identify, commemorate or recognize people, places or events. They accomplish this more professionally and with more distinction than any other medium available. Bronze plaques can be produced in any size with various border styles, letter styles, and finishes. No other product matches the permanence or beauty of a bronze plaque.

800-265-0041
www.mailboxes.info

| Circle Reader Service #184

Reduce Impact Noise

9 Finishes



The Noble Company

NobleSeal® SIS is a sheet membrane that reduces the impact noise produced by hard surface flooring (like tile and hardwood floors). SIS is only 3/64-in.-thick so it minimizes problems with transitions and the need to alter door and cabinet heights. It is effective at reducing noise (IIC=62; STC=59). SIS can be installed over all common substrates, even gypsum concrete and radiant heating systems. SIS can also protect thin-set tile from cracking and provide waterproofing. Visit their web site. Email richard@noblecompany.com

800-878-5788
www.noblecompany.com

| Circle Reader Service #182

Translucent Water Features

10 Specialties

Harmonic Environments, Inc.

Harmonic Environments is the only waterfall manufacturer to offer ZonePure™ water purification systems with every waterfall, making their products uniquely suited for healthcare, hospitality, office, or anywhere clean and healthy water features are desired. Each custom waterfall can be created using environmentally friendly materials. From low emissions components to recycled glass, Harmonic Environments is committed to providing architects and interior designers with Green design solutions.

866-440-0074
www.harmonicenvironments.com

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TO ADVERTISE: Contact Deidre Allen
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deidre_allen@McGraw-Hill.com

Glass Rail Brackets

10 Specialties

Livers Bronze Company

Yet another new glass rail bracket design from Livers—the modern RB-1074 rail bracket. It complements their Struct-U-Rail© glass-supported railing system and provides a decorative flare to enhance your glass railing. It accepts a 1 1/2-in. diameter metal hand railing and offers a wide selection of powder coat finishes. Since building codes require a continuous metal railing with glass railing systems, Livers Bronze manufactures a stylish selection of brackets like no other that meet codes without compromising design.

816-300-2828
www.liversbronze.com

| Circle Reader Service #186

Ceiling Fans & Lighting

11 Equipment

G Squared

Clean and simple, the Flyte ceiling fan is a GOOD DESIGN Award winner. View brushed nickel with mahogany blades and all white versions on their Web site. Includes 100W dimmable light and touch control system, remote control available. Cap for non-light use included. Whisper quiet, powerful and beautifully made, this timeless design can be used on 8-1/2-ft. ceilings or on cathedral ceilings with optional downrods up to 6-ft. Suitable for sloped ceilings up to 29°. Lifetime warranty. To buy high-design architectural fans and lighting please call or visit their Web site.

877-858-5333
www.g2art.com

| Circle Reader Service #189

Canopies

10 Specialties

Mapes Industries, Inc.

Mapes Industries manufactures a complete line of hanger rod canopies and walkway covers. These pre-engineered canopies incorporate roll formed and extruded roof decking, flat or corrugated, with projections up to 12-ft. With multiple fascia profiles, the canopies are a cost effective alternative to jobsite built designs. Custom colors are also available. Specially designed brackets allow these canopies to be attached to any wall surface including EIFS, metal buildings and CMU. For more information, please call or visit their web site.

800-228-2391
www.mapes.com

| Circle Reader Service #187

Modular Guardrail System

11 Equipment

Kee Industrial Products, Inc.

KeeGuard® fall protection systems are independently tested to meet or exceed OSHA Standard CFR 29 1910.23 and 1926.500, which require the presence of a barrier within 6-ft. of roof edges. The modular, freestanding guardrail system installs easily on flat or low-sloped roofs without penetrating the roof membrane. It is galvanized for corrosion resistance and features a new "drop in"-style fitting component that reduces installation time in half and accommodates more varied design configurations such as curved roofs. KeeGuard systems are also available to fit skylights, roof hatches, stairwells and walkways.

800-851-5181
www.KeeGuard.com

| Circle Reader Service #190

Art Presentation

10 Specialties

Walker Display Incorporated

Life's all about change and so is Walker Display when it comes to art presentation. The Walker system frees you to explore all your options. No-More-Holes frees you to rearrange your artwork with ease and speed. Embrace change!

800-234-7614
www.walkerdisplay.com

| Circle Reader Service #188

Public Seating

12 Furnishings

Arconas

Arconas, public seating specialists, provides modular public seating solutions for high impact waiting areas in: airports; bus, rail and ferry terminals; healthcare; courthouses; and universities. Their award-winning, high performance public seating lines are designed to the highest standards of durability, comfort, safety and security, with built-in easy maintenance features.

800-387-9496
www.arconas.com

| Circle Reader Service #191

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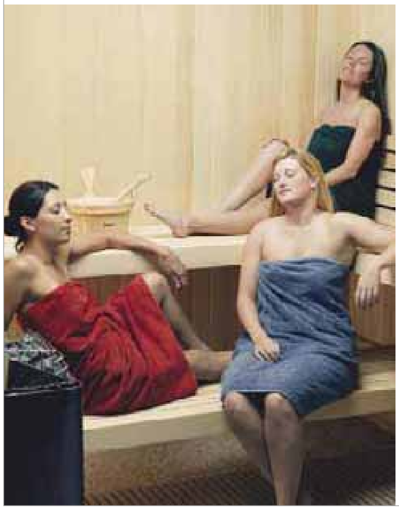
Saunas

13 Special construction



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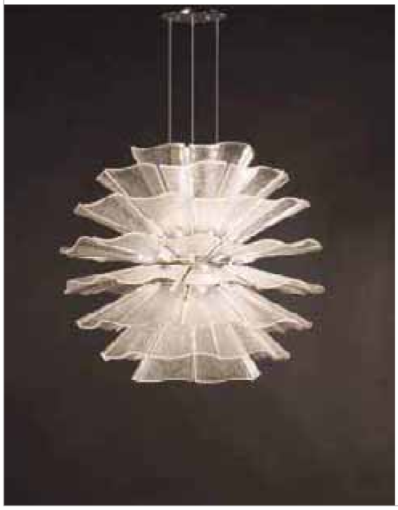

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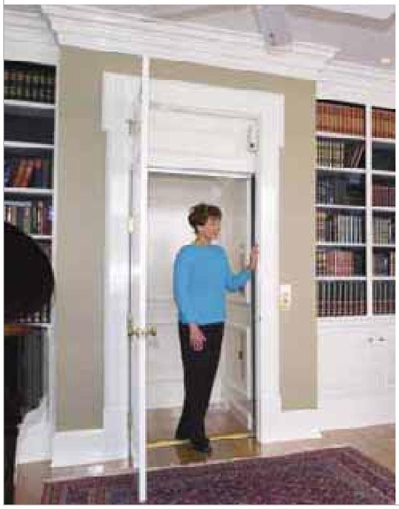

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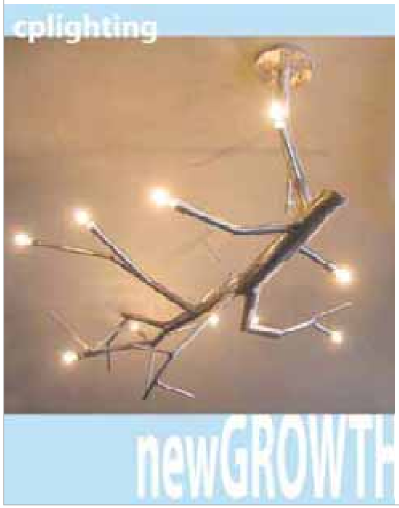

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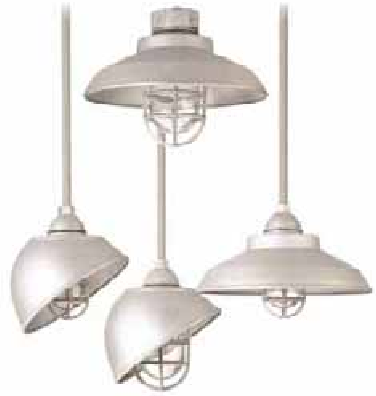

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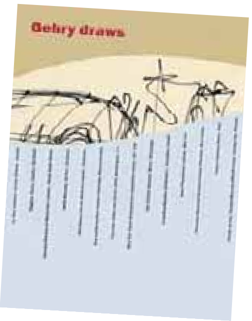
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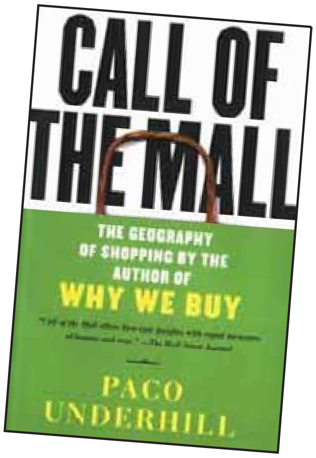
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200, 223			AIA *aia.org*
245			AIA *aia.org*
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63	*91*	Ⓢ	AltusGroup *altusprecast.com*
66	*39*		Arakawa Hanging Systems *arakawagrip.com*
193	*64*		Architectural Data Systems *architecturaldatasystems.com*
16	*NO*		Architectural Record *archrecord.construction.com*
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218-222	*74*	Ⓢ	Artistic Doors & Windows *artisticdoorsandwindows.com*
227	*79*		Arts-Supplies.net Hanging Systems *arts-supplies.net*
31			Audi *audiusa.com*
43	*19*		B-K Lighting *bklighting.com*
158	*92*		Beam *beamvac.com*
189	*62*	Ⓢ	Belden Brick Company, The *beldenbrick.com*
79	*44*		Belgard *belgard.biz*
194			BNi Building News *bnibooks.com*
68	*41*	Ⓢ	Bobrick *bobrick.com*
48	*23*		Building Systems Design *bsdsoftlink.com*
192			Business Week/Arch Record Awards *aia.org*
17	*9*		C/S Group *c-sgroup.com*
227	*80*		Cascade Coil Drapery *cascadecoil.com*
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144D	*90*	Ⓢ	CHMI *chmiarch.com*
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226	*76*	Ⓢ	Crossfield Products Corp *dexotex.com*
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45	*21*		Delta *deltafaucet.com*
62	*33*		Design Guide *designguide.com*
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167	*55*	Ⓢ	Follansbee Steel *follansbeeroofing.com*
72-73	*43*	Ⓢ	Fypon *fypon.com*
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148	*51*		IGT Glass *glastroesch.ch*
145	*49*		Indiana Limestone Company *indianalimestonecompany.com*
190	*63*		International Code Council *iccsafe.org*
229	*81*		Kepco+ Incorporated *kepcoplus.com*
144A	*88*		Kim Lighting *kimlighting.com*
4	*3*	Ⓢ	Kusser Aicha Graniteworks USA *kusserUSA.com*
179	*57*		Lamarite Slate by Tamko *lamarite.com*
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12	*7*	$	VT Industries *vtindustries.com*
49	*24*		Western Red Cedar Lumber Association *realcedar.org*
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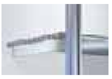
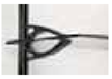
Rakks wall-mounted shelving at Christine Desirée Collection, Sarasota, FL Interior Design: Christine Desirée

SUPPORTING SPATIAL EFFECTS

Rakks Bracket


Rakks on Pole

Universal Bracket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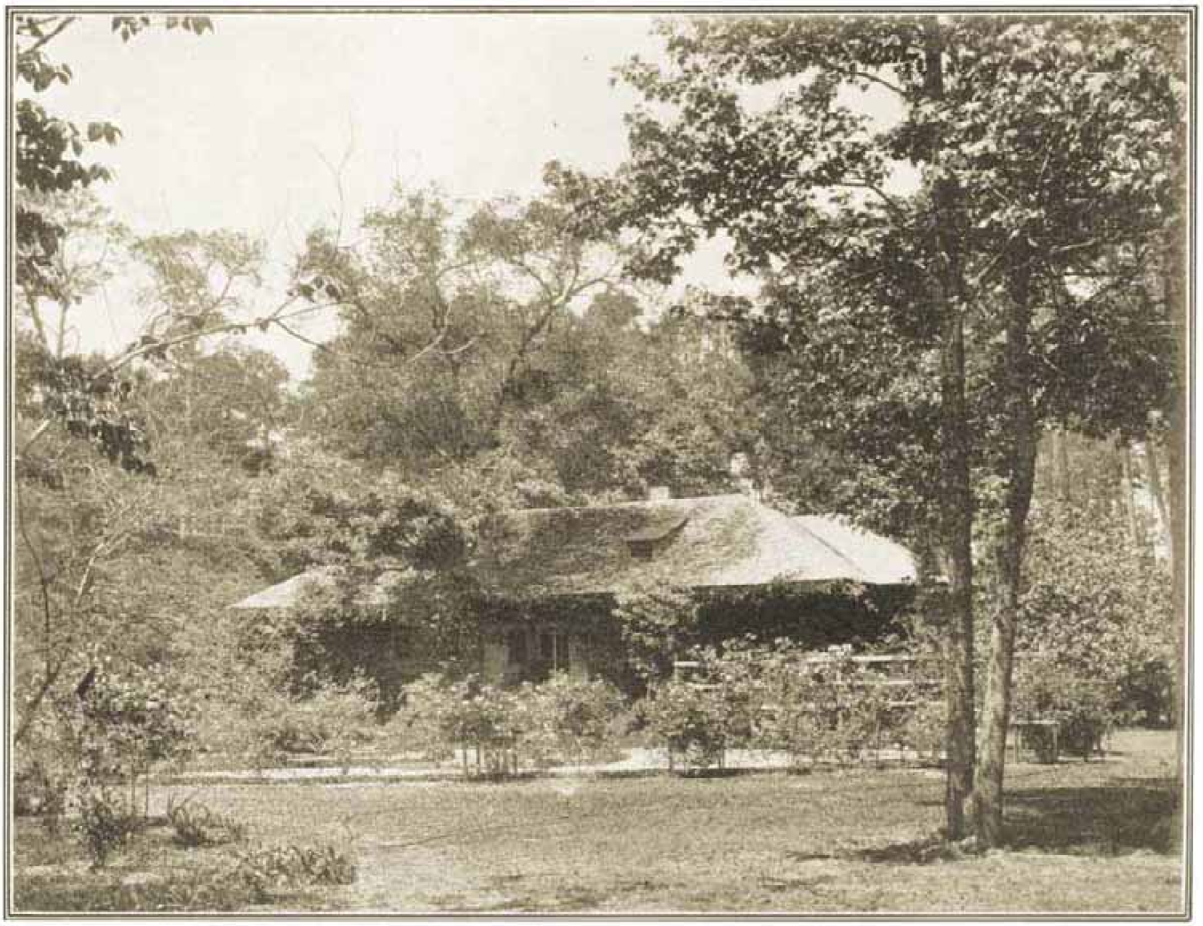
Lost to Katrina

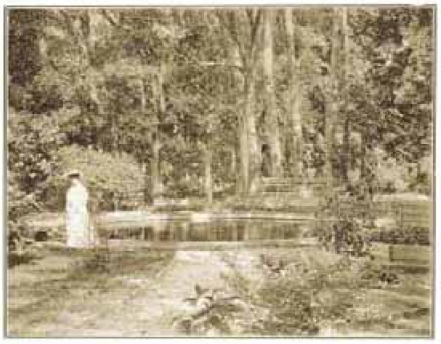


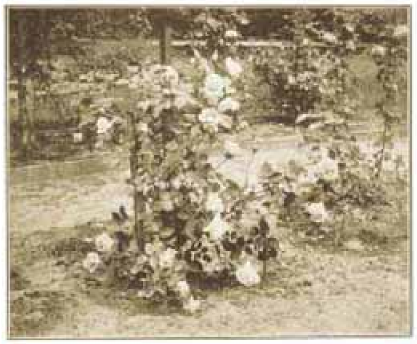
FROM ARCHITECTURAL RECORD June 1905

Sullivan's cottage in Ocean Springs, Mississippi

Among the tragic losses of architecturally significant buildings along the Gulf Coast are the little-known vacation cottage and landscaped grounds that Louis Sullivan designed in 1890 in Ocean Springs, Mississippi, near Biloxi. Sullivan had gone down to the Gulf of Mexico in the winter months of 1889–90 with James and Helen Charnley, for whom Adler & Sullivan (and employee, Frank Lloyd Wright) would create the now-landmarked house in Chicago in 1891–92. All three fell in love with Ocean Springs, and there Sullivan soon built a house and guest house for the Charnleys, plus a one-story bungalow and outbuildings for himself on the adjoining property. His cottage's deep, overhanging roofs sheltered large verandas to offer protection from the sun during the warm months, and large windows fostered cross ventilation. A lover of gardening, Sullivan landscaped the grounds to include two rose gardens, the larger of which was arranged in concentric circles. Photographs of the house, immersed in a setting of oaks, hickory, and pine trees, were published in ARCHITECTURAL RECORD in 1905, accompanied by a lyrical essay by Lyndon P. Smith, Sullivan's associate on the Bayard Building in New York (1899). Unfortunately, the house and its plantings were totally destroyed by Hurricane Katrina. There is hope, however, for the two Charnley houses. Severely damaged, they await a prospective buyer who will restore them. *Suzanne Stephens*

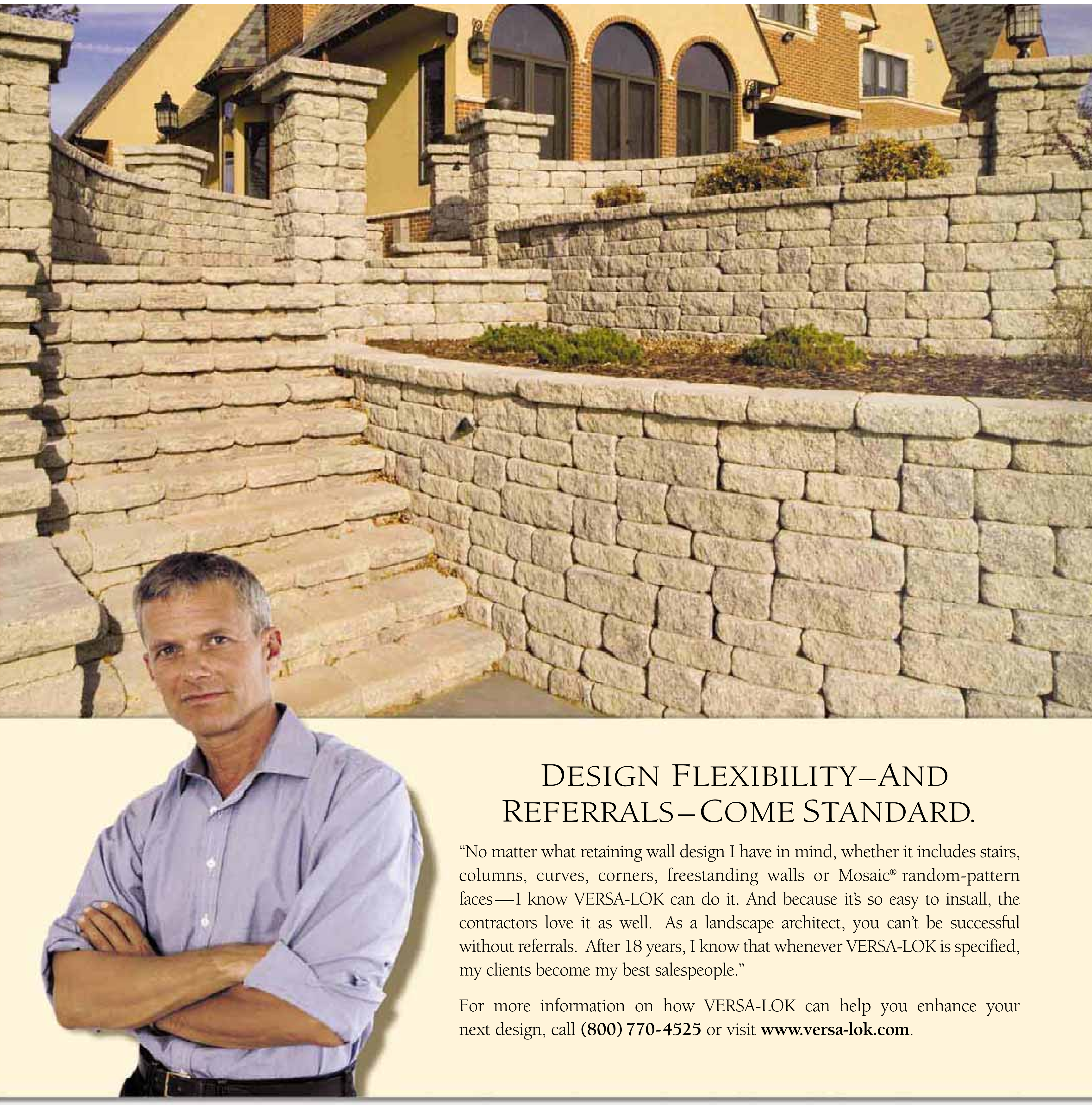
This page is the first in a series devoted to the Gulf Coast's historic architecture destroyed or damaged by Hurricane Katrina.





Sullivan designed both the bungalow (above) and the landscape for his vacation retreat. The woman standing by the pool (right) is thought to be his wife, Margaret.

PHOTOGRAPHY: FROM THE ARCHITECTURAL RECORD ARCHIVES



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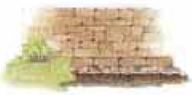

Mosaic Random Face Patterns

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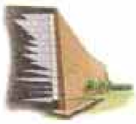

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